IV. *On New or Rare Crustacea of the Order Cumacea from the Collection of the Copenhagen Museum.*—Part II. *The Families* Nannastacidæ *and* Diastylidæ.

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[PLATES XXXII.–XXXVII.]

IN this, the second and concluding part [†] of a report on Cumacea from the Zoological Museum of Copenhagen, twenty-nine species are dealt with, all except two of which are regarded as new, and three new genera are established. As in the case of the specimens dealt with in Part I., the authorities of the Copenhagen Museum have courteously allowed a selection of those here described to be retained for the British Museum.

List of the Species dealt with in this Paper.

Family NANNASTACIDÆ.

Cumella forficula, sp. n.	Gulf of Siam.
,, *clavicauda*, sp. n.	West Indies.
,, *leptopus*, sp. n.	,,
,, *hispida*, sp. n.	Gulf of Siam.
,, *serrata*, sp. n.	West Indies.
,, *lævis*, sp. n.	Gulf of Siam.
Nannastacus lepturus, sp. n.	Suez.
,, *zimmeri*, sp. n.	Ceylon.
,, *gibbosus*, sp. n.	Gulf of Siam.
,, *reptans*, sp. n.	,,
,, *minor*, sp. n.	,,
,, *tardus*, sp. n.	,,
,, *agnatus*, sp. n.	,,
Schizotrema depressum, gen. et sp. n.	,,
,, *bifrons*, sp. n.	India.
,, *sordidum*, sp. n.	Gulf of Siam.
Campylaspis platyuropus, sp. n.	,,
,, *orientalis*, sp. n.	Korea.

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[†] For Part I., see Trans. Zool. Soc. xviii. pt. i. No. 1 (1907).

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Family Diastylidæ.

Gynodiastylis carinata, gen. et sp. n.	New Zealand.
,, *lævis,* sp. n.	,,
,, *costata,* sp. n.	Gulf of Siam.
,, *bicristata,* sp. n.	,, and Japan.
Paradiastylis longipes Calm.	,,
Colurostylis pseudocuma, gen. et sp. n.	New Zealand.
Diastylopsis elongata, sp. n.	,,
,, *crassior,* sp. n.	,,
Diastylis koreana, sp. n.	Korea.
,, *fistularis,* sp. n.	Gulf of Siam.
,, *insularum* Calm.	New Zealand.

It is not pretended that this list, with that published in the first part of the paper, accounts for every specimen in the collections submitted to me. A certain number remain over which may represent undescribed species, but they are solitary, immature, or mutilated specimens, undistinguished by any striking features, and descriptions of them, necessarily incomplete, would only add to the perplexities of future students of the group. In addition, there are a considerable number of male specimens of the genera *Cumella* and *Nannastacus* which, as explained below, have so far defied my efforts to reduce them to systematic order.

In working through this very extensive collection, together with other collections from tropical and southern seas reported on elsewhere, the infrequency with which known species have been recognized has been very striking. We seem to be dealing only with random samples from a very rich and varied fauna, and there can be little doubt that the vast majority of existing species of Cumacea still remain to be discovered. While the group is far more abundantly represented in tropical seas than had been supposed, much more extensive collecting will be necessary before it is possible to compare the number of species with those found in boreal and arctic waters; certainly the warmer seas have nowhere been found, as yet, to yield the enormous numbers of individuals occurring, for instance, in favourable localities on the Norwegian coast; and, as in many other groups of animals, the tropical species are far inferior in size to those from the colder regions of the north.

The manifest imperfections of our knowledge make it useless to attempt at present any general discussion of the geographical distribution of the Cumacea. Provisionally, however, it may be said that the collections hitherto examined show a remarkable preponderance, in the warmer seas, of the Bodotriidæ (especially the genus *Cyclaspis*) and Nannastacidæ (especially *Cumella* and *Nannastacus*) and a paucity of Diastylidæ and Leuconidæ. Further south, in New Zealand, as in the Magellan and other sub-antarctic regions, and in the Antarctic Ocean, the Diastylidæ and Leuconidæ reassert themselves.

From the point of view of the general taxonomy and phylogeny of the Crustacea the results of recent additions to our knowledge of the Cumacea are disappointing. Not one of the new-genera which have been described perceptibly extends the group towards any of the adjacent Orders of the Malacostraca. The separation of the branchial orifices in *Zygosiphon* and *Schizotrema* might perhaps be thought to take us a little way back in the direction of the Mysidacea, but it is more likely to be a secondary modification than a primitive character; and although *Ceratocuma* in its free telson and full series of pleopods unites two characters, presumably primitive, not elsewhere found in combination, it is in all other respects a specialized type. The Cumacea still remain a sharply circumscribed group, and although it is as certain as anything of the sort can well be that they have been derived from a Mysidacean-like ancestral form and that their line of descent travelled for some little way along with that of the Tanaidacea and Isopoda (but not, probably, with that of the Amphipoda), none of the intermediate links appear to have survived.

It was to be expected that the classification of the Cumacea, established by Sars almost entirely from a study of northern species, would require modification as a result of the discovery of so many new species from other seas. As usually happens in such cases, the diagnoses of existing families have to be greatly modified if they are to admit the new forms, and the limits between the families become harder and harder to recognize. I have elsewhere proposed the union of the Campylaspidæ with the Nannastacidæ, and have commented on the increasing difficulty of keeping the Vauntompsoniidæ apart from the Bodotriidæ and the Diastylidæ from the Lampropidæ. The new genus *Colurostylis* described below similarly helps to bridge the gap between the Diastylidæ and Pseudocumidæ. In many cases characters hitherto relied on for the separation of families—such as the number of thoracic exopods or of pleopods—have proved to be of not more than generic value, and in the case of some of the species of *Nannastacus* described below I have been led to suspect that the number of thoracic exopods may not be even a specific character. Whether it will be possible to group the genera of the order in a smaller number of natural and sharply defined families is a problem which must be left for the future. It is at least as likely that it will be necessary, as it has been in the case of the Gammaridean Amphipods, to establish a much larger number of families and to be content to define these by more trivial characters. At the present moment, however, any attempt at a re-classification could only be of the most provisional nature, and I have therefore preserved, where possible, the existing families, with such extensions as are necessary to admit the new forms.

In the descriptions which follow, the measurement of "total length" includes the telson (when distinct) but not the uropods. As it is often impossible to straighten out the abdomen without the risk of damage to the specimen, it is difficult to obtain accurate measurements, and the figures given must be regarded only as approximate.

Family NANNASTACIDÆ.

Genus Cumella.

In addition to the specimens described below there are in the collection a number of males of this genus, collected, for the most part, by Dr. Mortensen in the Gulf of Siam, which I am unable to identify with any described species or to allot to any of the females found with them. As in the case of the genus *Nannastacus*, I do not attempt to describe these males.

Key to the Species of Cumella (excluding *C. molossa* Zimmer, not yet figured, but described as closely resembling *C. gracillima*).

A. Last somite inflated, longer than the preceding.
  a. Legs of last pair about as long as carapace, carpus more than twice as long as merus; pseudorostrum long . . . . *C. forficula*, sp. n.
  b. Legs of last pair two-thirds as long as carapace, carpus less than twice as long as merus; pseudorostrum very short . . . . . *C. clavicauda*, sp. n.
B. Last somite not inflated, not longer than the preceding.
  a. Peduncle of uropods more than twice as long as last somite; carpus of last leg more than three times as long as merus.
    A. Carapace one-fourth of total length; pseudorostrum well-developed; eye absent; antennal flagellum of male not longer than thorax . . . . *C. gracillima* Calman.
    B. Carapace one-third of total length; pseudorostrum very short; eye present; antennal flagellum of male nearly equal to length of body . . . . *C. leptopus*, sp. n.
  b. Peduncle of uropods less than twice as long as last somite.
    A. Last somite about equal in length to the preceding; carpus of last leg three times as long as merus; peduncle of uropods distinctly shorter than last somite . . . . *C. hispida*, sp. n.
    B. Last somite distinctly shorter than preceding; carpus of last leg less than three times as long as merus; peduncle of uropods about equal to or longer than last somite.
      a. Carpus of last leg more than twice as long as merus . . . . *C. serrata*, sp. n.
      b. Carpus of last leg less than twice as long as merus.
        a′. Antero-lateral margin of carapace deeply concave, the lower angle prominent.
          1. Third free somite with double dorsal tooth (female) . . *C. australis* Calman.
          2. Third free somite without dorsal tooth . . . . *C. pygmæa* G. O. Sars.
        b′. Antero-lateral margin of carapace straight, the lower angle with a small tooth.
          1. Rami of uropods subequal . . . . *C. lævis*, sp. n.
          2. Exopodite of uropods shorter than endopodite . . . . *C. limicola* G. O. Sars.

Cumella forficula, sp. n. (Plate XXXII. figs. 1–6.)

Description of adult Female.—Total length 1·7 mm.

Carapace a little less than one-third of total length, compressed, its depth more than half of its length. The dorsal edge is sinuous, concave in its posterior part, convex anteriorly, and with a small convexity just in front of the hinder margin; commonly, each of these convexities bears a curved spine, but sometimes only the anterior spine is present. The ocular lobe is prominent on the dorsal surface and the eye is well pigmented. The pseudorostrum is long, directed slightly upwards, and acutely pointed; the lateral plates meet in front of the ocular lobe for a distance greater than the diameter of the lobe. The straight antero-lateral margin slopes backwards and the obtuse antero-lateral angle bears a single minute tooth. The surface of the carapace, as of the rest of the body, bears a number of scattered hairs.

The abdomen is but little shorter than the cephalothoracic region. The last somite is of peculiar form; it is longer than the preceding somite and, as seen from the side, it is inflated, with arched upper and under surfaces; seen from above, it increases in width posteriorly and is produced as a rounded lobe for some distance between the bases of the uropods.

The antennules are slender, resembling in proportions those of *C. limicola*, but the unsegmented inner flagellum is still more minute.

The mouth-parts appear to differ only in trivial details from those of the type of the genus.

The first legs resemble those of *C. limicola*, but have the basis relatively a little shorter, less than two-thirds as long as the remaining segments. In the second legs the basis is a little less than two-thirds as long as the remaining segments, while that of *C. limicola* is distinctly more.

The remaining legs are much more slender and have the carpus more elongated than in *C. limicola*. Those of the last pair are about as long as the carapace and have the carpus more than twice as long as the merus and four-fifths as long as the basis.

The uropods are very short, their greatest length to the tip of the terminal spines being less than that of the last somite. The peduncle is less than half as long as the last somite, tapers a little distally, and is hardly more than twice as long as its greatest width. The rami, especially the endopodites, are curved inwards like the tail-forceps of an earwig. The terminal spines are indistinctly defined from the rami, but to the tip of its spine the endopodite is a little longer than and the exopodite equal to the peduncle. There are two spinules on the inner edge of the endopodite and a few setæ on that of the peduncle.

Adult Male.—Total length 1·85 mm.

The body is a little more slender and elongated than in the female, the depth of the carapace being less than half its length. There are no spines on the carapace and the inequality of the dorsal surface is less marked. The eye is very large, with large and prominent corneal lenses. The pseudorostrum is shorter than in the female and its upper edge is concave. The antero-lateral margin is very short and the angle has no tooth. The last somite of the abdomen is inflated as in the female. The antennal flagella are nearly or quite as long as the body and the lateral grooves are well-marked on all the abdominal somites except the last.

The proportions of most of the appendages are much as in the female, but the uropods are longer; their length to the tip of the terminal spines is greater than that of the last somite. The peduncle is more than half as long as the last somite and nearly three times as long as its greatest width. There are four spinules on the inner edge of the endopodite and five spinules interspersed with fine setæ on that of the peduncle.

Occurrence.—Gulf of Siam, "Koh Kam, 5–10 fathoms, 4–6/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00," "North side of Koh Chang, 1 fathom, 3/3/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

CUMELLA CLAVICAUDA, sp. n. (Plate XXXII. figs. 7–10.)

Description of adult Male.—Total length 1·9 mm.

Carapace less than one-third of total length, its depth more than half of its length. Dorsal edge slightly sinuous, without spines. The eye is very large, with about nine large corneal lenses, of which one is in the middle line in front; in all the specimens examined the eye-pigment is aggregated into a pair of small lateral spots, so that under a low magnification the eye appears to be paired and the animal is apt to be mistaken for a species of *Nannastacus*. The pseudorostrum is very short, the lateral plates hardly meeting, if at all, in front of the ocular lobe and forming a pair of small tooth-like prominences when the carapace is viewed from above. The antero-lateral margin is short and nearly straight and the angle is rounded off. As in *C. forficula*, the last abdominal somite is longer than the preceding and inflated as seen from the side; seen from above it increases in width posteriorly, but the hinder edge is broadly convex and hardly produced between the bases of the uropods. The lateral groove is distinct only on the first four abdominal somites and the antennal flagellum is of a corresponding length.

The antennules have the peduncle shorter and stouter than in *C. forficula*, the inner flagellum minute and unsegmented.

The basis of the first legs is much more than two-thirds as long as the remaining segments.

The posterior legs are relatively short; those of the last pair are little more than two-thirds as long as the carapace and have the carpus about one and a half times as long as the merus and little more than half as long as the basis.

The uropods are similar to those of *C. forficula*. The greatest length to the tip of the terminal spine is about one-third more than that of the last somite. The peduncle is about two-thirds as long as the last somite and not much more than twice as long as its greatest width. The endopodite is not quite so much curved as in *C. forficula* and the exopodite is nearly straight. There are four spinules on the inner edge of the endopodite, and about six, interspersed with fine setæ, on that of the peduncle.

Occurrence.—"Cruz Bay, St. Jan" (Danish West Indies). Chr. Levinsen Coll., Copenhagen Museum. Co-types in British Museum.

CUMELLA LEPTOPUS, sp. n. (Plate XXXII. figs. 11–14.)

Description of adult Male.—Total length 2·2 mm.

Carapace about one-third of total length, its depth a little more than half of its length. Dorsal edge very slightly sinuous, without spines. The eye is very large, with about seven large and prominent corneal lenses, of which one is in the middle line in front of the ocular lobe; in all the specimens examined the eyes are without conspicuous pigment. The pseudorostrum is practically obsolete, the lateral plates apparently not meeting in front of the ocular lobe. The antero-lateral margin is concave, and the angle, which is slightly prominent, is rounded. The last somite of the abdomen is less than two-thirds as long as the preceding, and is produced and pointed posteriorly. The lateral grooves are distinct on all the abdominal somites except the last and the antennal flagellum is about as long as the body.

The antennules have the peduncle rather slender, the last segment being about three times as long as thick, and the inner flagellum minute and unsegmented.

The first legs have the basis about equal in length to the remaining segments and the propodus two and a half times as long as the dactylus. The second legs have the distal segments slender, and the carpus more than twice as long as the merus.

The posterior legs are very slender. The last pair are a little shorter than the carapace and have the basis about two-thirds as long as the remaining segments; the carpus is about three-fourths as long as the basis and four times as long as the merus.

The uropods are long and slender; the peduncle is more than twice as long as the last somite and has about nine spines on its inner edge; the endopodite is less than half the length of the peduncle, with a long slender apical spine and six spines on the inner edge; the exopodite is about five-sixths as long as the endopodite and its terminal spine is very long and slender.

Occurrence.—"Cruz Bay, St. Jan" (Danish West Indies). Chr. Levinsen Coll., Copenhagen Museum. Co-type in British Museum.

CUMELLA HISPIDA, sp. n. (Plate XXXII. figs. 15–18.)

Description of adult Female.—Total length 2·55 mm.

Carapace a little less than one-third of total length, its depth about half its length. Dorsal edge slightly arched, with a shallow depression in front of the hinder margin and two teeth in front of the middle. The ocular lobe is prominent on the dorsal surface and the eye is pigmented. The pseudorostrum is long, directed obliquely upwards, and acutely pointed; the lateral plates meet in front of the ocular lobe for a distance much greater than the diameter of the lobe. The antero-lateral margin is concave and the lower corner is nearly rectangular. The surface of the carapace and of the rest of the body bears rather numerous scattered hairs.

The abdomen is a little shorter than the cephalothorax. The last somite is about equal in length to the preceding, not inflated; seen from above it increases only slightly in width posteriorly, and is produced as a broad rounded lobe for some distance between the bases of the uropods.

The antennules have the peduncle rather slender, the last segment being more than three times as long as thick, and the inner flagellum minute and unsegmented.

The first legs have the basis a little less than two-thirds as long as the remaining segments; that of the second legs is about two-thirds as long as the remaining segments.

The remaining legs are slender; the last pair are a little shorter than the carapace and have the carpus three times as long as the merus and four-fifths as long as the basis.

The uropods have the peduncle about three-fourths as long as the last somite. The straight endopodite, together with the terminal spine which is indistinctly marked off from it, measures a little more than the length of the peduncle and is longer by one-fourth than the exopodite. There are two spinules on the inner edge of the endopodite and two on that of the peduncle.

Occurrence.—Gulf of Siam, "Koh Kam, 5 fathoms, 6/2/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

CUMELLA SERRATA, sp. n. (Plate XXXII. figs. 19–24.)

Description of adult Female.—Total length 2·2 mm.

Carapace less than one-third of total length, compressed, its depth nearly two-thirds of its length. The dorsal edge is slightly convex, with about six curved teeth, of which one is set on a prominence just behind a shallow depression and in front of the hind margin. The ocular lobe is prominent on the dorsal surface and is provided with distinct lenses, but without pigment. The pseudorostrum is long, directed obliquely upwards, and acutely pointed; the lateral plates meet in front of the ocular lobe for a distance greater than the diameter of the lobe. The antero-lateral margin is concave and the angle bears an acute tooth. The surface of the carapace and of the rest of the body bears only inconspicuous scattered hairs.

The abdomen is equal in length to the cephalothoracic region. The last somite is shorter than the preceding, not inflated; seen from above it increases slightly in width posteriorly and projects as a rounded lobe for some distance between the bases of the uropods.

The antennules have the last segment of the peduncle about three times as long as thick and a little shorter than the preceding.

The first legs have the basis little more than half as long as the remaining segments; that of the second legs is little shorter than the remaining segments.

The posterior legs are rather slender; the last pair are a little shorter than the carapace and have the carpus more than twice as long as the merus and nearly as long as the basis.

The uropods have the peduncle longer by about one-fourth than the last somite. The endopodite without its stout terminal spine is about two-thirds as long as the peduncle and more than half as long again as the exopodite. There are three spinules on the inner edge of the endopodite and four on that of the peduncle.

Adult Male.—Total length 2·3 mm.

Carapace about one-third of total length, its depth about half its length. The dorsal edge is nearly straight, without teeth. The ocular lobe bears a number of large and prominent lenses, but is without pigment. The pseudorostrum is short, obliquely truncated, with the upper edge slightly concave; the lateral plates meet in front of the ocular lobe for a distance less than the diameter of the lobe. The antero-lateral margin is oblique and the angle is rounded. The surface of the body is without conspicuous hairs.

The abdomen is shorter than the cephalothoracic region. The last somite is shorter than the preceding, not inflated; seen from above it is more than two-thirds as broad as long, increasing slightly in width posteriorly and projecting as a rounded lobe for some distance between the bases of the uropods. The lateral antennal grooves are distinct on all the somites except the last.

The antennules have the last segment of the peduncle about three times as long as thick and distinctly shorter than the preceding. The flagella of the antennæ are about as long as the body.

The proportions of the legs are much as in the female. The last pair are distinctly shorter than the carapace and have the carpus two and a half times as long as the merus and nearly as long as the basis.

The uropods have the peduncle longer by one-half than the last somite. The endopodite, without its terminal spine, is less than two-thirds as long as the peduncle and distinctly more than half as long again as the exopodite. There are six spinules on the inner edge of the endopodite and the same number on that of the peduncle.

Occurrence.—"Cruz Bay, St. Jan (Danish West Indies), 6/96." Chr. Levinsen Coll., Copenhagen Museum. Co-types in British Museum.

CUMELLA LÆVIS, sp. n. (Plate XXXII. figs. 25–27.)

Description of adult Female.—Total length 1·15 mm.

Carapace a little more than one-third of total length, its depth more than half its length. Dorsal edge horizontal, slightly sinuous, without teeth. The ocular lobe is prominent on the dorsal surface and the eye is pigmented. The pseudorostrum is very short and truncated, the lateral plates meeting in front of the ocular lobe for a distance less than the diameter of the lobe. The straight antero-lateral margin slopes backward and the angle is obtuse and rounded. The surface of the carapace and of the rest of the body is without conspicuous hairs.

The abdomen is shorter than the cephalothoracic region. The last somite is less than two-thirds as long as the preceding, not inflated; seen from above it is little longer than broad and its broadly rounded posterior lobe projects only for a short distance between the bases of the uropods.

The antennules have the peduncle rather stout, the last segment being about two and a half times as long as wide and shorter than the preceding segment; the inner flagellum is minute and unsegmented.

The first legs have the basis about half as long as the remaining segments; that of the second legs is more than two-thirds as long as the remaining segments.

The remaining legs are short and stout; the last pair are little more than two-thirds as long as the carapace and have the carpus about one-half longer than the merus and little more than half as long as the basis.

The uropods have the peduncle nearly twice as long as the last somite. The subequal rami are more than two-thirds as long as the peduncle and each bears a slender terminal spine sharply marked off from it. There are four spines increasing in length distally on the inner edge of the endopodite.

Occurrence.—Gulf of Siam, "Koh Kam, 1–5 fathoms, 1/1/00, 6/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

Genus NANNASTACUS.

The discrimination of species in this genus presents difficulties which I have not been able altogether to overcome. The collection of the Copenhagen Museum comprises a very large number of specimens of *Nannastacus*, most of which were collected in the Gulf of Siam by Dr. Th. Mortensen. The great majority of these are males resembling in general characters the male of *N. zimmeri* described below, but differing among themselves in size, in the proportions of the uropods and legs, in the relative size of the eyes, and in other small characters. Most of these characters are subject to individual variation, and after dissecting, drawing, and comparing a number of these males I have reluctantly come to the conclusion that it is impossible, at present, to group them under specific names or to pair them with the different forms of females.

In the case of *N. zimmeri*, the single female specimen was found in a gathering containing numerous specimens of the male and no other Cumacea, so that there is every probability that the two sexes do belong to the same species. In the richer gatherings from the Gulf of Siam, however, two or three closely allied types of female frequently occur in the same bottle with numerous males which cannot be satisfactorily distinguished from one another.

The new species of which females are described below (*N. zimmeri*, *N. gibbosus*, *N. reptans*, *N. minor*, *N. tardus*, and *N. agnatus*) differ from the type of the genus (*N. unguiculatus*) in having no exopod on the third maxilliped in that sex, and I find that the female type specimen of *N. suhmii* G. O. Sars agrees with them in this respect. The males of *N. suhmii* and *N. zimmeri*, however, have a well-developed exopod on that appendage, and it may fairly be assumed that the males of the other species will be found to have it also. The absence of this exopod in the female sex is already known in several species of Diastylidæ, and in that family it has been regarded as a distinction of generic value. It might have been so regarded in this case also, were it not for a further peculiarity presented by *N. reptans* and *N. tardus*. The females described under these names differ from all Cumacea hitherto known in having no thoracic exopods at all; they have lost not only that of the third maxilliped, but also those of the first and second legs; and, curiously enough, each of them was accompanied in nearly all the gatherings in which they occurred by another form hardly differing from the first in any character of importance except in possessing exopods on these legs. Both forms are represented by mature ovigerous females, and I have thought it advisable to describe them under distinct specific names, but it must be admitted as quite possible that *N. reptans* may be merely an individual variation or a phase in the life-history of *N. minor*, and that *N. tardus* may stand in the same relation to *N. agnatus*. At all events, the two pairs of species, if they are specifically distinct, can hardly be generically separated; and since the absence of exopods from the first and second legs seems to be a distinction at least as important as the absence of an exopod from the third maxilliped, there is no good reason for giving generic value to the latter character and not to the former.

I formerly gave as one of the distinguishing characters of the genus *Nannastacus* the absence of a distinct ischium in the second maxillipeds (Fisheries, Ireland, Sci. Invest. 1904, i. (1905) p. 23). In some of the species described below I find indications of a separate ischium in this appendage, but as the character is one which it is difficult to verify without undue sacrifice of material I should prefer to omit it from the generic definition.

As many of the species are known only in one sex it is not possible to give a satisfactory key to their arrangement. I have attempted, however, in the remarks appended to the description of each new species to indicate as far as possible its systematic relations.

NANNASTACUS LEPTURUS, sp. n. (Plate XXXIII. figs. 1–3.)

Description of adult Male.—Total length 2·0 mm.

Carapace a little more than one-third of total length, slightly compressed, dorsal margin slightly arched. The pseudorostrum, seen from the side, is short and truncate. Antero-lateral margin concave, forming a widely open antennal notch; antero-lateral angle rounded, hardly produced. Eyes prominent, darkly pigmented, set rather close together, the distance between them not more than one-eighth of the length of the carapace.

The first leg-bearing somite is distinct. The pleural plates of the succeeding thoracic somites are hardly expanded laterally.

The abdomen is nearly equal to the cephalothoracic region. The somites are cylindrical, each with a well-marked lateral groove; the fifth somite is one and a half times as long as the fourth and twice as long as the last, which is truncate posteriorly.

The peduncle of the antennule has the three segments (as seen without dissection) subequal, the second with a short distal process on the upper side, not reaching beyond the end of the segment; both flagella have two segments, and the inner flagellum is a little shorter than the first segment of the outer.

The first legs have a slender dactylus, about two-thirds as long as the propodus.

In the last pair of legs the basis is little more than one-third of the length of the limb, the carpus is less than twice as long as the merus, and one-third longer than the propodus, which again is about equal to the dactylus with its claw.

The peduncle of the uropods is more than twice as long as the last somite, slender, with five spinules on the finely serrated inner edge. The endopod is about half as long as the peduncle, with a terminal spine of less than half its length and seven spines, increasing in length distally, on the inner edge. The exopod is about four-fifths of the length of the endopod and bears a slender terminal spine of its own length.

Remarks.—*N. longirostris* G. O. Sars, *N. brachydactylus* Calman, and the species described above form a group defined from the other species of the genus by having the peduncle of the uropods at least twice as long as the last somite. *N. hirsutus* Hansen, which has the peduncle only about equal to the last somite, agrees with the first two of these species in the length of the pseudorostrum, of which the lateral plates meet above for at least one-sixth of the total length of the carapace. From all these species *N. lepturus* is distinguished by the very short pseudorostrum and by having the abdomen nearly equal to the cephalothoracic region.

Occurrence.—"Suez, 3/1/98, H. Mortensen." Copenhagen Museum.

NANNASTACUS ZIMMERI, sp. n. (Plate XXXIII. figs. 4–15.)

Description of adult Female.—Total length 1·5 mm.

Carapace a little more than one-third of total length, inflated behind, where the width is greater than the depth, much narrowed in front. Seen from the side the dorsal edge is convex, with a slight elevation at the posterior margin bearing a small tubercle; the pseudorostrum is short, directed obliquely upwards, narrowly truncate; antero-lateral margin deeply concave, antero-lateral angle produced into a blunt spine with a few setæ at the apex. Seen from above, the lateral plates of the pseudorostrum meet below but not above the respiratory channel, so that the opening of the latter extends back to the interocular margin; only the tips of the antero-lateral angles project laterally. The eyes are small and darkly pigmented, and the distance between them is about one-fourth of the length of the carapace. The surface of the carapace is smooth, with very minute scattered setæ, and there is a slight depression on each side behind the eye.

The first leg-bearing somite is reduced to a very narrow strip behind the carapace, expanding below into the pleural plates, which, like those of the following somites, are spread out laterally.

The abdomen is about equal in length to the cephalothoracic region, slender and cylindrical, without teeth or spines; the fifth somite is about one-third longer than the preceding somite.

The third maxillipeds have no exopods; the basis is a little more than one-third of the total length. The first and second legs carry exopods. The remaining legs are slender and do not differ greatly in length. The proportions of the last pair are much as in the male.

The uropods have the peduncle about half as long as the last somite. The endopod is about three times as long as the peduncle, with a stout terminal spine of less than half its length and two spinules on the inner edge, which is finely serrated throughout. The exopod is less than one-eighth of the length of the endopod, with a slender terminal spine which reaches beyond the middle of the latter.

There is an irregular patch of dark pigment on each side of the anterior part of the carapace and a band encircling the penultimate somite of the abdomen.

Adult Male.—Total length 1·6 mm.

Carapace a little more than one-third of total length, not so deep as in the female, not much narrowed in front, its width greater than its depth. Seen from the side the dorsal edge is nearly straight, with a median depression between the inflated branchial regions; the pseudorostrum is very short and blunt; antero-lateral margin deeply concave, antero-lateral angle rounded and armed with a curved spine, behind which are a few irregular serrations. Seen from above, the lateral plates of the pseudorostrum meet for a short distance above the respiratory channel and the antero-lateral angles project laterally. The eyes are large and darkly pigmented, and the distance between them is not more than one-sixth of the length of the carapace. The surface of the carapace is very minutely granular.

The first leg-bearing somite is hardly visible and its pleural plates are very small.

The pleural plates of the succeeding somites are not so much expanded laterally as in the female.

The abdomen is about equal in length to the cephalothoracic region, without teeth or spines on the dorsal surface, but with a lateral groove overhung by a serrated crest on each of the somites; the fifth somite is at least one-half longer than the fourth.

The antennule has a rather slender peduncle, the first segment about as long as the other two together; the second segment is produced distally into a narrow process bearing a group of plumose setæ; the inner flagellum is unsegmented and equal in length to the first of the two segments of the outer.

The flagellum of the antenna extends, in the natural position, at least as far as the penultimate somite of the abdomen.

The mouth-parts closely resemble those of *N. unguiculatus*, but the palp of the maxillula is relatively a little longer. The third maxilliped has a well-developed exopod and the basis is about half of the total length.

The first legs have the basis little more than half the combined length of the remaining segments; there are no teeth on the outer margin of the ischium and merus.

The legs of the last pair are less than one-third of the length of the body; the basis is about one-fourth of the length of the limb, the carpus nearly four times as long as the merus and nearly one and a half times as long as the propodus; the dactylus with its claw is a little longer than the carpus.

The uropods have the peduncle about two-thirds as long as the last somite. The endopod is about three times as long as the peduncle, with a terminal spine of one-third of its length and five spinules on the distal part of the finely serrated inner edge. The exopod is about one-tenth of the length of the endopod and its terminal spine reaches beyond the middle of the latter.

As in the female, there are some irregular patches of pigment on the side of the carapace and a band encircling the penultimate somite and there are also less distinct and less constant bands on the third and fourth abdominal somites.

Remarks.—This species is closely allied to *N. suhmii* G. O. Sars ('Challenger' Rep. Cumacea (1887), p. 63, pl. x. figs. 4–5). As I have elsewhere mentioned (Herdman's Rep. Ceylon Pearl Fisheries, Royal Soc. pt. ii. (1904) p. 177), the type specimens of that species are now more accessible for examination than when they were described by Prof. Sars, although they are by no means in a good state of preservation. In the female specimen I find no trace of an exopod on the third maxilliped, and I believe that the species agrees with *N. zimmeri* in this character, Sars's mention of a small exopod on "the second pair of gnathopoda" being based on some misinterpretation of the mounted specimen. The female *N. suhmii*, however, differs from the species described above in the form of the carapace, which, as shown in Sars's figure, has the branchial regions very strongly inflated and the posterior part of the dorsal surface much more prominent;

there seems to have been a median spine or tooth a little in front of the middle of the dorsal surface; the anterior abdominal somites have strong paired teeth on the dorsal side; and the exopod of the uropods, with its spine, is not more than one-third of the length of the endopod. The males of the two species are much more alike, but in *N. suhmii* the exopod of the uropods is much shorter than in the species described above, being even shorter, relatively, than in the female (the proportion of one-fourth of the exopod, which I formerly mentioned for the males, is, however, slightly exceeded in some specimens).

Occurrence.—" Trincomali, Ceylon, surface, 3/1889, K. Fristedt Coll." Copenhagen Museum. Co-types in British Museum.

NANNASTACUS GIBBOSUS, sp. n. (Plate XXXIII. figs. 16–21.)

Description of adult Female.—Total length 1·8 mm.

Carapace two-fifths of total length, little broader than deep. The pseudorostrum is very short and truncate and the two parts meet together in the middle line below the respiratory orifice. The antero-lateral margin is deeply concave, the antero-lateral corner produced and triangular, sometimes with one or two teeth at the tip. The eyes are prominent and darkly pigmented. The surface of the carapace is very uneven, but the inequalities are developed in varying degrees in different specimens. The branchial regions are inflated to form rounded bosses, between which the dorsal surface is depressed in the middle line. Posteriorly, the dorsal surface is elevated more or less and there is a small boss on each side just behind the eyes. One or two spiniform teeth are commonly set on the posterior elevation of the dorsal surface and another in the middle a little way behind the eyes, but all of these may be absent. A number of long setæ are scattered over the surface of the carapace.

The first leg-bearing somite is represented only by the pleural plates. The remaining thoracic somites have the pleural plates expanded and rounded. The second and the last somites may have a spiniform tooth in the middle of the dorsal surface, as may also the first abdominal.

The abdomen is a little shorter than the cephalothoracic region, the fifth somite is about twice as long as deep and rather more than one-third longer than the preceding somite.

The antennule has the third segment of the peduncle longer than the second and, together with it, longer than the first; the outer flagellum has a minute terminal segment.

The third maxillipeds have no exopods; the basis is about one-third of the total length of the limb.

The first legs have well-developed exopods; the basis is about two-sevenths of the total length of the limb.

The second legs have well-developed exopods; the basis is inflated and is about three-fourths as long as the distal segments together; the distal segments are broad, the carpus is distinctly longer than the merus, and the dactylus is twice as long as the propodus.

The remaining legs do not differ greatly in length; the last pair are about one-third of the total length of the body. The basis is a little over one-fourth of the length of the limb, the carpus is a little more than twice as long as the merus and about equal to the propodus.

The uropods have the peduncle a little over three-fourths as long as the last somite, with two small teeth on the inner edge. The endopod is nearly three times as long as the peduncle, with a stout terminal spine of about one-third of its length and with five small spines on its inner edge. The exopod is less than one-eighth as long as the endopod, with a slender terminal spine which does not reach to the end of the latter.

Remarks.—The specimens described above resemble the female of Sars's *N. suhmii* even more closely than does that of *N. zimmeri*, especially in the inflated branchial regions and the posterior gibbosity of the carapace. They differ from *N. suhmii* in the shorter and more obtuse pseudorostrum, in the less prominent dorso-lateral teeth of the first abdominal somite and their absence from the following somites, in the shorter carpus of the posterior legs, and in the much longer exopod of the uropods.

Occurrence.—Gulf of Siam, "Koh Chang, about 1 fathom, coral," "Koh Kam, 5 fathoms, mud." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

NANNASTACUS REPTANS, sp. n. (Plate XXXIII. figs. 22–28.)

Description of adult Female.—Total length 1·5 mm.

Carapace more than one-third of total length, little broader than deep. The pseudorostrum is very short and truncate, and the two parts meet together in the middle line below the respiratory orifice. The antero-lateral margin is deeply concave, the antero-lateral corner produced and triangular. The eyes are prominent and darkly pigmented. The surface of the carapace is very uneven, being depressed in the middle line between the inflated branchial regions and with a median convexity anteriorly. A few long setæ are set on the branchial regions and on other parts of the surface.

The first leg-bearing somite appears to be represented only by the pleural plates. The remaining thoracic somites have the pleural plates expanded and rounded, without spines. The last thoracic and the first abdominal somites have each, on the dorsal surface, a pair of small spiniform teeth.

The abdomen is nearly equal to the cephalothoracic region; the fifth somite is a little less than twice as long as deep and about one-third longer than the preceding somite.

The antennule has the second and third segments of the peduncle subequal and together about equal to the first segment. The outer flagellum has a minute terminal segment.

The mandibles, maxillulæ, maxillæ, and first maxillipeds appear to differ in no conspicuous characters from those of *N. unguiculatus*. The second maxillipeds have the basis only about one and a half times as long as broad; the basal plate carries seven setæ.

The third maxillipeds have no exopods; the basis is less than one-third of the total length of the limb; the distal segments are relatively very stout.

The first legs also are without exopods. The basis is not more than one-quarter of the total length of the limb.

The second legs have no exopods. The basis is not inflated and is little shorter than the remaining segments together. The distal segments are broad, the carpus is hardly longer than the merus, and the broad dactylus is not twice as long as the propodus.

The remaining legs increase slightly in length to the last pair, which are about two-fifths of the total length of the body; the basis is a little over one-fourth of the length of the limb, the carpus is not three times (in the third pair it is less than twice) as long as the merus and a little shorter than the propodus.

The uropods have the peduncle about two-thirds as long as the last somite, with two small teeth on the inner edge. The endopod is about twice as long as the peduncle, with a stout terminal spine of about half its length and with three minute spines and a small seta on the inner edge. The exopod is less than one-fifth as long as the endopod, with a slender terminal spine which reaches nearly to the end of the latter.

Remarks.—This species differs from that last-described in the form of the carapace (which has the branchial regions less inflated and the anterior part of the dorsal surface more strongly arched), in the greater length of the posterior legs, and in the different proportions of the uropods. It differs more remarkably in the absence of exopods from the legs of the first and second pairs, in which respect it resembles the species described below as *N. tardus*.

Occurrence.—Gulf of Siam, "Koh Kahdat, about 1 fathom, coral, i.–ii./00," "Koh Chang, 1 fathom, coral, i.–iii./00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

NANNASTACUS MINOR, sp. n. (Plate XXXIV. figs. 1–3.)

Description of adult Female.—Total length 1·3 mm.

Carapace not quite two-fifths of total length, little broader than deep. Pseudorostrum very short and truncate, the two parts meeting in the middle line below the respiratory orifice. Antero-lateral margin deeply concave, the antero-lateral corner produced and triangular. Eyes prominent and darkly pigmented. Surface of carapace not very uneven, the branchial regions only slightly inflated, with a depression between them in the mid-dorsal line. There are a few scattered setæ on the surface of the carapace.

The first leg-bearing somite is represented only by the pleural plates. The remaining thoracic somites have the pleural plates expanded and rounded.

The abdomen is shorter than the cephalothoracic region; the fifth abdominal somite is barely twice as long as deep, and less than one-third longer than the preceding somite.

The antennule has the third segment of the peduncle shorter than the second and, together with it, a little shorter than the first.

The third maxillipeds have no exopods; the basis is less than one-third of the total length of the limb; the distal segments, especially the carpus and propodus, are very stout and only slightly flattened.

The first legs have well-developed exopods; the basis is about two-sevenths of the total length of the limb; the distal segments, especially the carpus and propodus, are expanded and flattened.

The second legs have well-developed exopods; the basis is inflated and is about equal to the remaining segments together; the distal segments are broad, the carpus is distinctly longer than the merus, and the dactylus is only a little longer than the propodus.

The remaining legs do not differ greatly in length. The last pair are about two-fifths of the total length of the body; the basis is more than one-fourth of the length of the limb, the carpus is about twice as long as the merus and a little shorter than the propodus.

The uropods have the peduncle nearly two-thirds as long as the last somite. The endopod is about twice as long as the peduncle, with a stout terminal spine of more than half its length, and with three small spines on its inner edge. The exopod is about one-fifth as long as the endopod, with a slender terminal spine which reaches nearly to the end of the latter.

Remarks.—Apart from the possession of exopods on the first and second pairs of legs this species resembles the preceding somewhat closely, especially in the relative length and proportions of the posterior legs and of the uropods. There are, however, small but constant differences in the form of the carapace, which has the branchial regions less inflated and the dorsal surface less arched; in the stoutness of the distal segments of the third maxillipeds and first pair of legs; and some small differences of proportion noted in the description above. It has already been mentioned as a possibility that this species may represent only a variation or a phase of development of *N. reptans*, but I do not think that this is probable.

Occurrence.—Gulf of Siam, "Koh Kahdat, about 1 fathom, coral, 1/2/00," "Koh Chang, 1 fathom, coral, 1/3/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

Nannastacus tardus, sp. n. (Plate XXXIV. figs. 4–11.)

Description of adult Female.—Total length 1·6 mm.

Carapace about three-sevenths of total length, considerably broader than deep. The pseudorostrum is very short and truncate, and the two parts meet together in the middle line below (and apparently also above) the respiratory orifice. The antero-lateral margin is deeply concave, the antero-lateral corner produced and triangular, extending in front of the pseudorostrum, the lower edge serrated anteriorly. The surface of the carapace is not very uneven and the branchial regions are only slightly inflated.

The first leg-bearing somite is represented only by the pleural plates, which, like those of the following somites, are greatly expanded laterally and bear a marginal row of laminar spines (partially detached in the specimen figured). The second leg-bearing somite has a small median tooth dorsally.

The abdomen is shorter than the cephalothoracic region: the first somite has a pair of small dorso-lateral teeth, but these are often absent, or perhaps readily become detached; the fifth somite is at least twice as long as deep and nearly one-half longer than the preceding somite.

The antennule has the second and third segments of the peduncle subequal and together about equal to the much stouter first segment.

The third maxillipeds have no exopods. The basis is less than one-third of the total length of the limb, and its distal process is very long and narrow.

The first legs also have no exopods. The basis is about two-sevenths of the total length of the limb, and has a prominent rounded lobe on its inner edge.

The second legs are without exopods. The basis is about three-fourths as long as the remaining segments together. The carpus is much longer than the merus and the dactylus is not twice as long as the propodus.

The remaining legs are subequal in length and less than one-third as long as the body. The basis is about one-fourth of the length of the limb, the carpus is less than three times as long as the merus and about equal to the propodus.

The uropods have the peduncle little more than half as long as the last somite. The endopod is a little more than twice as long as the peduncle, with a stout terminal spine of less than half its length and three small spines on the distal part of its inner edge. The exopod is about one-sixth as long as the endopod, and its terminal spine does not reach to the end of the latter.

Remarks.—In the form of the carapace, with its strongly produced antero-lateral angles and slightly inflated branchial regions, this species approaches more closely to *N. unguiculatus* than to any other species hitherto described. It differs from that species, however, in having no exopod on the third maxilliped, in the absence of spines from the carapace and from the dorsal surface of the posterior abdominal somites, the much feebler serrations on the lower margin of the carapace, the shorter posterior legs and exopod of the uropods, and in many other details. It also differs from all other Cumacea, with the exception of *N. reptans* described above, in having no exopods on the first and second pairs of legs.

Occurrence.—Gulf of Siam, "Koh Kam, 5–10 fathoms, 2/00," "Koh Kahdat, 4–5 fathoms, 16/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 8/2/00," "North of Koh Mesan, 10–15 fathoms, 15/2/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

NANNASTACUS AGNATUS, sp. n. (Plate XXXIV. figs. 12 & 13.)

Description of adult Female.—Total length 1·3 mm.

Resembling the specimens of *N. tardus* very closely, but having well-developed exopods on the legs of the first and second pairs. The basis of the first legs is a little shorter, but is shaped as in that species; the basis of the second legs is a little longer; the posterior legs appear to be slightly stouter and shorter. The last somite is distinctly shorter and the peduncle of the uropods is more than half its length.

Remarks.—Apart from the presence of exopods on the first two pairs of legs, I have not been successful in finding any characters other than those mentioned above to differentiate this species from *N. tardus.* The possibility suggests itself, therefore, even more strongly than in the analogous case of *N. reptans* and *N. minor*, that we have to do here with a single species in which the exopods may be lost (1) by accident, (2) as a matter of individual variation, or (3) normally in the course of the breeding-period. The analogy of other Cumacea makes the first of these very improbable; as regards the third it is to be noted that both forms are represented by ovigerous females, and that the specimens of *N. tardus* are on the whole, a little longer than those of *N. agnatus.* I do not think that any importance can be attached to the fact that, except in one case, the two forms occurred together in the same gatherings, and in the absence of conclusive evidence that they belong to a single species, it seems convenient to assign specific names to both.

Occurrence.—Gulf of Siam, "Koh Kam, 5–10 fathoms, 2/00," "Koh Kahdat, 4–5 fathoms, 16/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 8/2/00," "North of Koh Mesan, 10–15 fathoms, 2/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

SCHIZOTREMA, gen. nov.

Carapace more or less depressed, not overhanging the anterior free somites; lateral plates of pseudorostrum not meeting in front of head, exhalent respiratory orifices paired and widely separated from each other; third maxillipeds and first two pairs of legs with exopods in female: other characters as in *Nannastacus.*

Type-species *S. depressum*, sp. n.

This genus bears the same relation to *Nannastacus* that *Zygosiphon* bears to *Cyclaspis*. No males have yet been identified, but the analogy of *Zygosiphon* makes it probable that the division of the respiratory openings will be found in that sex also. In the type-species the second maxilliped has a distinct ischium, but for reasons already mentioned (p. 351) I prefer not to regard this character as of generic value.

Key to the Species of Schizotrema.

A. Carapace very broad and depressed; a conspicuous lateral series of spines on carapace, posterior thoracic somites, and abdomen; peduncle of uropod longer than last somite . . . . *S. depressum*, sp. n.
B. Carapace less depressed; no conspicuous lateral spines on carapace or abdomen; peduncle of uropod not more than half as long as last somite.
  a. Surface of body with numerous small spines and tubercles; antero-lateral angle of carapace produced as a stout cylindrical process . . *S. bifrons*, sp. n.
  b. Surface of body for the most part smooth; antero-lateral angle produced as a slender tooth . . . . *S. sordidum*, sp. n.

Schizotrema depressum, sp. n. (Plate XXXIV. figs. 14–17.)

Description of adult Female.—Total length 1·5 mm.

Carapace a little less than one-third of total length, very broad and depressed. The pseudorostrum, seen from the side, is very short and truncate, directed obliquely upwards. Seen from above, the two parts of the pseudorostrum are widely separated, each completely surrounding the respiratory orifice, from which a long branchial siphon is protruded. The antennal notch is obsolete, the antero-lateral margin descending nearly vertically to the rounded antero-lateral corner, which carries a stout curved spine. A series of spines runs backwards from this along the lateral edge of the carapace, diminishing in size until the last two or three, which are again larger. The darkly-pigmented eyes lie just behind the branchial openings; the number of corneal facets could not be determined. The surface of the carapace is everywhere minutely granular, and, in some specimens, there is found on each of the branchial regions and on an elevation of the dorso-lateral surface on each side behind the eye a large granule or vesicular outgrowth, which apparently is very easily detached.

The free thoracic somites are very broad and depressed, their pleural plates armed with large spines.

The abdomen is shorter than the cephalothoracic region. The somites, with exception of the first, have a series of stout spines on each side; the last somite is shorter than the penultimate and is rounded posteriorly.

Long setæ are set here and there over the surface of the body, and a very conspicuous row of them fringes the lateral margins of carapace, free thoracic somites, and abdomen.

These lateral setæ are always thickly encrusted with mud, and as they project horizontally they greatly increase the apparent breadth and flatness of the body.

The antennule resembles closely that of *Nannastacus unguiculatus*, but the third segment of the peduncle is longer than the second, and only two segments could be detected in the outer flagellum. The antenna has the conical tip more produced than in the species named, and the basal part has two teeth on its anterior margin.

The mouth-parts resemble those of *N. unguiculatus*, except in trivial details. The third maxillipeds have a well-developed exopod, and have the carpus and propodus somewhat broadened.

The first legs are relatively longer than in *N. unguiculatus*. The basis is about two-fifths as long as the distal segments together. No teeth could be detected on the outer edge of the basis, ischium, or merus. In the second legs the distal segments are a little stouter than in the species named, and there are no conspicuous teeth on the outer edge of the basis.

The last three pairs of legs are much stouter and shorter than in *N. unguiculatus*. In the third pair the basis is about two-thirds as long as the distal segments together, the carpus is hardly longer than the merus and shorter than the propodus. In the fifth pair the basis is more than half as long as the distal segments together; the carpus is about one-half longer than the merus and about equal to the propodus; the dactylus, with its claw, is about equal to the propodus.

The uropods have the peduncle a little longer than the last somite, slightly expanded distally, with three conspicuous teeth on the inner edge. The endopod is a little longer than the peduncle, with a strong terminal spine a little longer than the ramus itself and a shorter spine near the distal end of the inner edge. The exopod is more than three-fourths as long as the endopod, with a long and slender terminal spine.

Occurrence.—Gulf of Siam, "Koh Kahdat, about 1 fathom, coral." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

SCHIZOTREMA BIFRONS, sp. n. (Plate XXXIV. figs. 18–21.)

Description of adult Female.—Total length 1·65 mm.

The carapace is a little less than two-fifths of the total length, its height not more than two-thirds of its greatest width. The pseudorostrum, seen from the side, is very short and rounded, with a group of curved spines on its lower edge; seen from above, the two parts of the pseudorostrum surrounding the respiratory orifices are widely separated; the branchial siphons are long. The antero-lateral margin slopes backwards from the lower edge of the pseudorostrum, and a widely open and angular antennal notch is completed below by the antero-lateral angle, which is produced as a stout cylindrical process tipped with a curved spine; a row of small spines on the outer surface of this process runs backwards on to the side of the carapace. The darkly pigmented eyes, each with three corneal facets, lie just behind the respiratory orifices. The surface of the carapace bears irregularly scattered small spines or tubercles interspersed with short hairs.

The first leg-bearing somite is almost entirely concealed; the remaining thoracic somites are broad and depressed, with a few small tubercles on the dorsal surface and on the pleural plates.

The abdomen is a little shorter than the cephalothoracic region. The somites are short and stout, the penultimate not longer than the preceding and shorter than the last somite, which is acutely pointed in the middle line posteriorly; they bear a few tubercles and short hairs.

The antennules have a rather stout peduncle, with two spines at the distal end of the first segment.

The third maxilliped has a well-developed exopod.

The posterior legs are rather long and slender. In the fifth pair the basis is about two-fifths as long as the distal segments together, the carpus is nearly three times as long as the merus and a little longer than the propodus; the dactylus, together with its strongly curved claw, is about three-fourths as long as the propodus.

The peduncle of the uropods is about half as long as the last somite and not much longer than broad, irregularly toothed on the outer and inner edges. The endopod is about two and a half times as long as the peduncle, strongly serrated on both edges, with a stout terminal spine of nearly half its length, and a small spine close to it at the distal end of the inner edge. The exopod is a little less than half as long as the endopod, and its slender terminal spine reaches beyond the end of the latter.

Occurrence.—"Paumben, India, 1–5 fathoms, K. Fristedt Coll." Copenhagen Museum.

SCHIZOTREMA SORDIDUM, sp. n. (Plate XXXIV. figs. 22–24.)

Description of adult Female.—Total length 1 mm.

Carapace nearly two-fifths of total length, rather broad and depressed. The pseudorostrum, seen from the side, is short and truncate, directed obliquely upwards; seen from above the two parts of the pseudorostrum surrounding the respiratory orifices are completely separated; the branchial siphons are long. The antennal notch is obsolete, the antero-lateral corner is produced into a slender point bearing a transparent apical spine. The darkly-pigmented eyes lie just behind the branchial openings; the number of corneal facets could not be determined. The surface of the carapace is sparsely covered with long hairs, but no spines were observed.

The free thoracic somites are broad and depressed, their pleural plates carrying long hairs and a few transparent and inconspicuous spines.

The abdominal somites are beset with long hairs, but these do not form a distinct lateral fringe as in *S. depressum*. The last somite is a little shorter than the penultimate and is rounded posteriorly.

The antennule has the third segment of the peduncle slightly longer than the second; the outer flagellum has three segments, the terminal one minute.

The third maxilliped has a well-developed exopod.

The first legs have the basis about one-third as long as the distal segments together, without teeth on the proximal segments. The last three pairs of legs are very long and slender. In the last pair the basis is little more than two-fifths as long as the distal segments together, the carpus is nearly four times as long as the merus and one-third longer than the propodus; the slender curved dactylus, with its claw, is about two-thirds as long as the propodus.

The peduncle of the uropods is not more than half as long as the last somite, without distinct teeth on the inner edge. The endopod is more than three times as long as the peduncle, serrated with very transparent teeth on its inner edge, and with a slender terminal spine. The exopod is about half as long as the endopod.

Remarks.—The incrustation of mud which commonly covers the body and limbs in species of this genus rendered the examination of this very minute form tedious and difficult. In removing the mud it is possible that some spines on the surface of the carapace may have been detached and overlooked, and it is probable that the number of hairs on the body and limbs was greatly diminished.

Occurrence.—Gulf of Siam, "Koh Chang, about 1 fathom, coral," "Koh Kahdat, 1 fathom, coral." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

CAMPYLASPIS PLATYUROPUS, sp. n. (Plate XXXIV. figs. 25–29.)

Description of immature Female (with developing brood-pouch).—Total length 1·8 mm.

The carapace is a little more than one-half of the total length and its dorsal surface is strongly arched. On each side is an oblique dorso-lateral ridge which curves towards the middle line on the posterior part of the dorsal surface. The pseudorostrum is short and truncated and the antennal notch is obsolete. The ocular lobe is very small and the eye is not distinct.

The abdominal somites are stout and are slightly depressed.

The mouth-parts have the structure usual in the genus.

The third maxillipeds have a well-developed exopod; the basis is shorter than the distal segments together; the merus is greatly expanded, less than twice as long as broad, and longer than the last three segments together.

The first legs have the basis about as long as the distal segments together; the ischium is produced internally into a large but thin and transparent triangular tooth.

The second legs have the terminal segment rather stout and shorter than the two preceding together.

The uropods are remarkably broad and flattened. The peduncle is less than twice as long as the last somite and two and a half times as long as broad, while its vertical thickness is little more than half its width. The endopod is about three-quarters as long as the peduncle, and its width near the base is about one-third of its length; it has seven spines on the inner edge, a longer terminal spine, and a small spinule external to the latter. The exopod is distinctly shorter than the endopod, with two slender terminal spines and one spinule each on the inner and outer edges.

Young Specimen.—In a very young specimen only ·9 mm. long, which I suppose to belong to this species, the flattening of the uropods is still more marked, the peduncle being little longer than broad, while the endopod is only about twice as long as broad.

Remarks.—In spite of its small size, the larger of the two specimens described above appears to be approaching maturity, and we may therefore assume that the broadened form of the uropods, though less marked than in the young, does not disappear in the adult.

Occurrence.—Gulf of Siam, "Koh Kam, 10 fathoms, 4/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00." Th. Mortensen Coll., Copenhagen Museum.

CAMPYLASPIS ORIENTALIS, sp. n. (Plate XXXV. figs. 1–5.)

Description of adult Female.—Total length 5·5 mm.

Closely resembling *C. rubicunda* Lilljeborg, as described by Sars. The pseudorostrum is very short and truncated as seen from above. The ocular lobe is longer than broad and the eye is indistinct. The abdominal somites are not depressed and are without lateral carinæ. The terminal segment of the first maxillipeds is larger than in Sars's figures. Third maxillipeds differing considerably from those of *C. rubicunda*; basis much longer than the distal segments together; ischium slightly produced internally; merus not greatly expanded, not wider than ischium, its inner edge straight or slightly concave, not nearly equal to the two succeeding segments together; propodus much longer than carpus. None of the segments are conspicuously serrated on the margins. First legs with the merus not expanded, hardly longer than the carpus. Second legs with the terminal segment shorter than the two preceding segments together, stouter than in *C. rubicunda*, with a long terminal seta. Uropods with peduncle about twice as long as last somite, not serrated internally; endopod about half as long as peduncle, with about eight spines on inner edge, terminal spine stouter than in *C. rubicunda*.

The specimens retain traces of a reddish-purple colour.

Remarks.—The resemblance of the specimens described above to *C. rubicunda* is so close that I should have been inclined to identify them with that species had it not been for the difference in shape of the third maxillipeds.

Occurrence.—"Korea, 35 fathoms, 22/1/82, Suenson Coll." Copenhagen Museum.

Family DIASTYLIDÆ.

Dr. C. Zimmer has lately (Cumaceen der Deutschen Tiefsee-Exp. p. 181, 1908) discussed in detail the classification of this extensive family. His re-definition of the genus *Diastylopsis* makes possible a more satisfactory allocation of a number of species previously referred to *Leptostylis*, but there are indications that the grouping of the species can be regarded only as provisional. Thus the general form of the body and the disposition of the posterior thoracic somites, which Zimmer regards as the chief distinguishing features of *Diastylopsis*, are repeated in some of the species of the new genus *Gynodiastylis* described below, and that genus is linked, by the important character of the third maxilliped, to the otherwise widely different *Paradiastylis*. Again, *Leptostylis thileniusi* Zimmer is now referred by its describer to *Diastylopsis*; but it has a very remarkable structure of the third maxilliped not found in the other species of the latter genus, and this structure, as I have pointed out (Ann. Mag. Nat. Hist. (8) i. p. 239, 1908), is clearly derived from the simpler condition found in *Leptostylis insularum*, a species which, according to Dr. Zimmer's classification, would fall into the genus *Diastylis*. On the other hand, the genus *Leptostylis*, reduced within the limits of a relatively precise definition by Zimmer's removal of various species to other genera, must again overrun these limits to include *L. walkeri* (Calman, Bull. Mus. d'Hist. Nat. Paris, 1907, no. 2, p. 121), which, by its well-armed telson, infringes the leading character of the definition.

Of *Diastylis*, which still includes the majority of the species of the family, Dr. Zimmer finds it impossible to give a satisfactory diagnosis—"Man kann einfach sagen, dass *Diastylis* diejenigen Diastylidenarten umfasst, die in keine der anderen Gattungen passen." As a matter of fact, the species included in *Diastylis* differ among themselves in characters which, in some cases, seem as important as those distinguishing the other genera, although without the discontinuity which renders easy the definition of generic groups.

The limits of the family itself tend to become indistinct. Thus, as Dr. Zimmer remarks, it is, with our present knowledge, very much a matter of taste whether *Pseudodiastylis* is to be referred to the Diastylidæ or to the Lampropidæ, and the new genus *Colurostylis* has the form of telson characteristic of the Pseudocumidæ, while the characters excluding it from that family are neither numerous nor very weighty.

Key to Genera of Diastylidæ.

A. No pleopods present in male sex. (Third maxilliped without exopod in female.) . . . . GYNODIASTYLIS, g. n.

B. Two pairs of pleopods in male sex.

  a. Third maxilliped without exopod in female . . . . PARADIASTYLIS Calman.

- b. Third maxilliped with exopod in both sexes.
  - *A*. Telson without spines.
    - *a*. Telson very small, flattened; endopod of uropods of two segments; third and fourth legs with vestigial exopods in female . . . . Colurostylis, g. n.
    - *b*. Telson larger, cylindrical; endopod of uropods of three segments; third and fourth legs without exopods in female . . . . Pachystylis Hansen *.
  - *B*. Telson with at least a pair of apical spines.
    - *a*. Body of mandible abbreviated . . . . Diastyloides G. O. Sars.
    - *b*. Body of mandible normal.
      - a′. Pleural plates of third and fourth free thoracic somites expanded backwards; third legs widely separated from second in adult female . . . . Diastylopsis S. I. Smith.
      - b′. Pleural plates of thoracic somites not produced backwards; third legs close to second in adult female . . { Diastylis Say. Leptostylis G. O. Sars.
  - *C*. Telson with a median apical spine . . . . Pseudodiastylis Calman.

Genus Gynodiastylis, gen. nov.

Pleural plates of third and fourth free thoracic somites more or less expanded backwards, third legs separated from second in adult female; telson unarmed, tubular, not produced beyond anus; third maxillipeds without exopods in female; no pleopods in male; endopod of uropods unsegmented or of two segments.

Type-species *G. carinata*, sp. n.

The name of this genus is intended to allude to the fact that the males resemble the females more closely than in the other genera of the family. In the type-species and in *G. lævis* the absence of exopods from the third and fourth pairs of legs makes it difficult to distinguish between males and immature females †. According to the precedents of Cumacean taxonomy, the presence of well-developed exopods on these legs in males of *G. costata* and *G. bicristata* would be regarded as a distinction of generic value, but in view of the close general resemblance between *G. carinata* and *G. costata* it seems impossible, for the present, to place them in separate genera.

Key to the Species of Gynodiastylis.

- A. No exopods on third and fourth legs of male.
  - a. Carapace with six longitudinal ridges on each side. Endopod of uropods of two segments . . . . *G. carinata*, sp. n.
  - b. Carapace smooth. Endopod of uropods unsegmented . . . . *G. lævis*, sp. n.

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* See also the remarks on *Diastylis* (?) *fistularis*, sp. n., below.

† The only other Cumacean of which the males resemble the females in the number of the thoracic exopods and in having no pleopods is *Heteroleucon akaroënsis* (Trans. Zool. Soc. xviii. (1) p. 34, 1907).

B. Exopods present on third and fourth legs of male.
  a. Carapace with numerous longitudinal ridges . . . . *G. costata*, sp. n.
  b. Carapace with a pair of dorso-lateral ridges . . . . *G. bicristata*, sp. n.

GYNODIASTYLIS CARINATA, sp. n. (Plate XXXV. figs. 6-31.)

Description of adult Female.—Total length 4·0 mm.

Carapace a little less than one-third of total length, its vertical height a little more than one-half of its length, subcylindrical, narrowed in front; dorsal outline very slightly arched as seen from the side. Pseudorostrum straight, horizontal, acutely pointed, a little less than one-fourth of length of carapace. Antennal notch widely open, defined below by the slightly-produced antero-lateral tooth. The surface of the carapace bears six longitudinal ridges on each side. Starting from the hind margin near the middle line, a ridge, somewhat less strongly marked than the others, runs forwards and inwards to meet its fellow at about the middle of the length of the carapace; from nearly the same point on the hind margin the second ridge runs directly forwards as far as the ocular lobe; the third ridge, nearly parallel with the last, curves slightly inwards anteriorly and ends close to the fronto-lateral fissure; the fourth ridge curves upwards a little in front of its origin, bounding a shallow depression on the side of the carapace, and then runs forwards on to the base of the pseudorostrum; the fifth ridge, which is very strong, runs below the above-mentioned depression and ends on the antero-lateral angle; a faintly-marked sixth ridge is visible in some specimens just above the lower margin of the carapace. The ocular lobe is less than twice as broad as long and bears three large but indistinctly defined corneal facets; the eye is without pigment.

All the five leg-bearing somites are distinct. The pleural plates of the third somite are expanded and produced in front and behind and the corresponding appendages are articulated near the posterior end, so that, in the adult female, a wide interval is left between the second and third pairs of legs. In this somite also, and to a greater degree in the two succeeding somites, the attachment of the limb is rotated backwards and upwards, so that, in the last somite, the leg is attached to its posterior border, and, when extended, points directly backwards. The last two somites have each a pair of longitudinal ridges on the dorsal surface.

The abdomen is distinctly shorter than the cephalothoracic region; the somites are slightly depressed, with a lateral longitudinal ridge on each side; as is usual in the Diastylidæ, the hinder edge of each somite is strongly concave on the upper surface. The penultimate somite is little longer than the preceding. The last somite is flattened from above downwards and is about as broad as long.

The telson is two-thirds as long as the last somite. Seen from above it is ovate in outline, its breadth three-fourths of its length, truncated in front and bluntly pointed at the tip, which bears two extremely minute setiform points. From the side it is seen to be tubular anteriorly, but cut away below from about the middle of its length to receive the obliquely placed anal valves. The apex of the telson does not project beyond the upper ends of the valves.

The antennules have the first segment of the peduncle longer than the other two together, and the second about half the length of the third; the outer flagellum is composed of two segments, of which the first is the longer; the inner flagellum is composed of three segments and is about equal in length to the first segment of the outer.

The antennæ are short, of three segments, with possibly a very minute terminal segment; each segment carries a plumose seta.

The mandibles are of the usual shape, with an elongated body and a row of twelve spines.

The other mouth-parts are of normal type. The maxillular palp is short and carries two setæ.

The first maxilliped has three very long setæ springing from the last three segments. The branchial apparatus is quite devoid of lobules, with the possible exception of a vestigial one near the proximal end.

The second maxilliped has a very long seta springing from the penultimate segment; the basal plate has eight setæ.

The third maxilliped has no exopod; the basis is slightly expanded but not produced distally, where it bears a series of long plumose setæ; the distal segments are rather slender, the propodus a little longer than either the carpus or the dactylus.

The first legs are stout and do not extend much in front of the pseudorostrum; the basis is about three-fourths as long as the distal segments together; the carpus is nearly twice as long as the two preceding segments together and has the inner edge irregularly tuberculate; the propodus is less than half as long as the carpus; the distal half of its inner edge is oblique and bears a series of ten very long smooth setæ, each slightly expanded at the base and four times as long as the segment from which they spring; the dactylus is little more than half as long and one-fourth as broad as the propodus, and bears one very long and some short setæ at the tip.

The second legs have the basis little more than twice as long as broad and as long as the remaining segments together; the distal segments become successively more slender; the dactylus is about as long as the propodus; the ischium is distinct, but very short.

The remaining legs are stout; the merus is slightly inflated, twice to three times as long as the carpus; the dactylus is slender, as long as the propodus, and its terminal spine is straight and very short.

The uropods have the peduncle a little shorter than the last somite and about two-thirds longer than the telson, slightly thickened distally, where the diameter is about one-third of the length. The exopod is about five-sixths as long as the peduncle; it bears two unequal stout setæ at the tip and two or three, more slender, on the inner edge, while the outer edge is clothed with very fine setæ. The endopod is about four-fifths as long as the exopod and is composed of two segments, the distal less than one-half as long as the proximal; it has a long terminal spine and four spines, each with a secondary seta, on the inner edge.

In the immature female there is no marked interval between the second and third pairs of legs.

Adult Male.—Total length 2·85 mm.

In general form the male resembles an immature female so closely as to be readily mistaken for one. It differs in having the ridges on the carapace somewhat more marked and especially in having strong paired dorso-lateral ridges on all the free thoracic somites instead of only on the last two. The pseudorostrum is narrowly truncated at the tip. The antero-lateral angle is rounded and obscurely serrated, and projects laterally so as to be visible from above.

The antennules have the outer flagellum composed of three segments.

The antennæ are very short, wholly concealed, in the natural position, by the carapace; the flagellum is composed of only eight segments and hardly exceeds in length the last segment of the peduncle, but its segments are well-defined and bear long sensory filaments.

The third maxilliped has an exopod which, in the adult male, is well-formed and carries long setæ, but in immature specimens is imperfectly segmented and has only rudimentary setæ at the tip.

The first legs are shorter than in the adult female, especially as regards the carpus, which is much less than twice as long as the two preceding segments together.

The third pair of legs have the basis stouter than in the female, expanding inwards just above the base so as to form a projecting shoulder. The setæ on the distal segments of this and the succeeding pairs of legs are stouter than in the female.

The uropods differ from those of the female in the fact that the rami are nearly equal in length and that the endopod has its proximal segment but little longer than the distal; the inner edge of the endopod has five spines including the subterminal one.

Remarks.—In addition to the characters which have been mentioned in the generic definition and in the key to the species, attention may be called to the peculiar tuft of long setæ on the propodus of the first legs and to the reduction of the antennal flagellum in the male.

Occurrence.—"Lyttleton Harbour, 1–5 fathoms, 8/97, H. Suter Coll." Copenhagen Museum. Co-types in British Museum.

GYNODIASTYLIS LÆVIS, sp. n. (Plate XXXV. figs. 32–39.)

Description of adult Female.—Total length 4·1 mm.

Carapace a little more than one-fourth of total length, its vertical height less than half of its length, subcylindrical, narrowed in front; dorsal outline slightly arched as seen from the side. Pseudorostrum straight, slightly deflexed, truncate, not more than one-eighth of total length of carapace. Antennal notch slightly marked, defined by a very small antero-lateral tooth. The surface of the carapace is quite smooth. The ocular lobe is slightly prominent as seen from the side; it is devoid of pigment and presents no distinct facets.

The first free thoracic somite is very short. The second is very long, more than a third of the length of the carapace as measured along the dorsal edge, and its pleural plate is produced anteriorly as a narrow lobe. The third and fourth somites are together little longer than the second in the dorsal line; their pleural plates are produced backwards and the articulation of the posterior legs is as in *G. carinata.*

The abdomen is slightly shorter than the cephalothoracic region. The somites are somewhat depressed and have faint lateral keels. The last somite is little shorter than the penultimate, about one-third longer than broad, and more than twice as broad as deep.

The telson is little more than half as long as the last somite, its breadth less than two-thirds of its length.

The antennules are shorter and more robust than in *G. carinata.* The first segment of the peduncle is less than twice as long as broad and about equal to the other two together, and the second is two-thirds as long as the third; the flagella are short and each composed of three segments. The antennæ resemble those of *G. carinata.*

The mouth-parts resemble those of *G. carinata*, but the distal setæ of the first and second maxillipeds are shorter than in that species. The third maxilliped is without an exopod; its basis is longer than in *G. carinata* and less expanded distally, where it carries only two or three setæ.

The first legs have the basis nearly twice as long as the distal segments together, produced distally at the inner corner as a strong tooth; the carpus is about as long as the two preceding segments together; the propodus is half as long as the carpus and bears three long setæ on the distal part of its inner edge; the dactylus is two-thirds as long as the propodus.

The second legs have the basis three times as long as broad and nearly twice as long as the remaining segments together; the dactylus and propodus are subequal and together shorter than the carpus.

The remaining legs are stout. The merus in the fifth pair is more than twice as long as the carpus; the dactylus is shorter than the propodus and its terminal spine is short and claw-like.

The uropods have the peduncle two-thirds as long as the last somite and reaching to two-thirds of the length of the telson, its distal diameter about one-third of its length. The exopod is about as long as the peduncle; it has two unequal stout setæ at the tip and a single small seta on the inner and two on the outer edge. The endopod is a little longer than the exopod and is unsegmented; it has a long terminal spine and six spines on the inner edge, the distal one much longer than the others; there are two or three setæ on the outer edge.

Adult (?) *Male.*—Total length 2·4 mm.

The male differs from the adult female in having a much shorter distance between the second and third pairs of legs, although the interval is more marked than in the male of *G. carinata.*

The carapace is shaped as in the female, with the pseudorostrum a little shorter and broader, and with the antero-lateral angle rounded. The ocular lobe is a little less prominent on the dorsal surface. The second leg-bearing somite is little longer than the first and its pleural plate is produced forwards as a narrow lobe. The pleural plate of the third somite is produced as a much broader lobe anteriorly.

The last abdominal somite is but little longer than broad and less than half as long again as the telson. The antennules have four segments in the outer flagellum. As in the male of *G. carinata*, the third maxilliped has a well-formed exopod. The difference in length of the rami of the uropods is a little more marked than in the female and the endopod has only four spines on the inner edge.

Remarks.—The difference in size between the sexes, much greater than in the case of *G. carinata*, throws doubt on the maturity of the male specimens described. In the characters of the antenna, however, they seem to be adult, the peduncle having a thick brush of setæ anteriorly, and the short flagellum (which was unfortunately broken in the specimen dissected) being distinctly segmented.

This species, while agreeing with *G. carinata* in having no exopods on the third and fourth legs of the male, differs from it in many important characters. Most conspicuous among these is the great size of the second free thoracic somite in the female. The first leg also differs greatly in the elongation of the basis and the feeble development of setæ on the propodus. Finally, the unsegmented endopodite of the uropods distinguishes the species from all the other members of the genus.

Occurrence.—"Lyttleton Harbour, 1–5 fathoms, 8/97, H. Suter Coll." Copenhagen Museum. Co-types in British Museum.

GYNODIASTYLIS COSTATA, sp. n. (Plate XXXVI. figs. 1–10.)

Description of adult Female.—Total length 2·35 mm.

Carapace about one-third of total length, its vertical height a little more than half its length; dorsal outline very slightly arched as seen from the side. Pseudorostrum straight, horizontal, acutely pointed, a little less than one-fourth of total length of carapace. Antennal notch widely open, defined below by the slightly produced antero-lateral tooth. The surface of the carapace is longitudinally ribbed, much as in *G. carinata*, but the ridges are more numerous and some of them are ill-defined and interrupted, so that it is difficult to make sure of their exact number and arrangement. There is a shallow depression towards the front on each side of the carapace, and in front of this, just behind the antero-lateral corner, is a short vertical ridge, forming a small tubercle behind the antennal notch, and continued upwards on to the side of the pseudorostrum. When viewed from above, this ridge is seen to carry a series of thin and transparent curved spines. The ocular lobe is about twice as broad as long. The eye is without pigment.

The pleural plates of the third free thoracic somite are produced in front and behind, and the attachment of the posterior legs is as in *G. carinata*. The penultimate thoracic somite has a pair of slightly marked dorso-lateral ridges.

The abdomen is shorter than the cephalothoracic region. The penultimate somite is little longer than the preceding. The last somite is flattened from above downwards and a little broader than long.

The telson is about three-fourths as long as the last somite. Seen from above its breadth is three-fourths of its length, and it is bluntly pointed at the tip, which bears two extremely minute setæ or spinules.

The antennules have the first segment of the peduncle as long as the other two together and the second half the length of the third; the outer flagellum is composed of two subequal segments; the inner flagellum has three segments and is shorter than the first segment of the outer.

The antennæ are short, of four segments, the terminal one very minute; each segment carries a plumose seta.

The first and second maxillipeds have long setæ springing from the distal segments as in *G. carinata*.

The third maxilliped has no exopod; the basis is slightly expanded, but not produced distally, where it bears a series of long plumose setæ; the distal segments are slender, the carpus, propodus, and dactylus subequal.

The first legs are stout and extend well beyond the pseudorostrum; the basis is about one-half as long as the distal segments together; the carpus is a little less than twice as long as the two preceding segments together; the propodus is half as long as the carpus, and the distal third of its inner edge is oblique and bears a series of about eleven smooth setæ, about two and a half times as long as the segment from which they spring; the dactylus is a little more than half the length of the propodus and bears one very long and some short setæ at the tip.

The second legs have the basis about two and a half times as long as broad and as long as the remaining segments together; the ischium is so short as to be easily overlooked; the distal segments become successively more slender; the dactylus is as long as the propodus and bears a small claw-like spine and one or two setæ at the tip.

The remaining legs are subequal in length, and stout. The merus is slightly inflated and about twice as long as the carpus; the propodus is half as long as the carpus and about equal to the dactylus, which is slender, curved, and terminates in a curved claw-like spine.

The uropods have the peduncle longer than the last somite and more than one and a half times as long as the telson, slightly thickened distally where the diameter is about one-third of the length. The exopod is nearly as long as the peduncle. It bears two unequal setæ at the tip and one or two small setules on the outer and inner edges. The endopod is a little longer than the exopod. It is composed of two segments, the distal a little longer than the proximal; it has two unequal spines at the tip and one spine on each segment on the inner edge.

Adult Male.—Total length 1·9 mm.

The carapace is more than one-third of the total length and has the dorsal outline more arched than in the female. The pseudorostrum is shorter and truncated. The antero-lateral serrations could not be demonstrated. The pleural plates of the third leg-bearing somite are not expanded, and there is no marked interval between the second and third pairs of legs.

There are four segments in the outer flagellum of the antennules. The antennæ are very short, only reaching, in the natural position, to the posterior edge of the carapace. There are well-developed exopods on the third maxillipeds and on all except the last pair of legs.

The peduncle of the uropods is about twice as long as the telson, and has four spinules on the inner edge. The rami are nearly equal in length and their terminal spines are long and slender. The endopod has, on the inner edge, two spines on the first and three on the second segment.

Remarks.—Apart from the presence of exopods on the third and fourth pairs of legs in the male, this species is distinguished from *G. carinata*, which it resembles in general characters, by the more numerous ridges on the carapace, by the curved claws of the posterior legs, and by other small characters mentioned above.

Occurrence.—Gulf of Siam, "Koh Kam, 20 fathoms, 4/2/00," "N. of Koh Chuen, 15 fathoms, 5/2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00." Th. Mortensen Coll., Copenhagen Museum. Co-types in British Museum.

GYNODIASTYLIS BICRISTATA, sp. n. (Plate XXXVI. figs. 11–22.)

Description of adult Female.—Total length 1·9 mm.

Carapace a little less than two-fifths of total length, its vertical height about two-thirds of its length, inflated; dorsal outline, as seen from the side, strongly arched posteriorly, sloping in front. Pseudorostrum short, horizontal, acutely pointed as seen from the side, truncated as seen from above. Antennal notch open, defined by a triangular antennal tooth. The dorsal surface of the carapace has a pair of strong cristiform ridges, which, starting from the hind margin, diverge anteriorly and then converge on to the sides of the pseudorostrum; between the crests the dorsal surface is nearly flat. The ocular lobe is nearly twice as broad as long. The eye is without pigment.

The free thoracic somites have each a pair of dorso-lateral crests, in line with those on the carapace, becoming indistinct on the last somite. The pleural plates of the third somite are not greatly expanded laterally and there is no great interval between the second and third pairs of legs. The abdomen is about as long as the cephalothoracic region. The penultimate somite is little longer than the preceding. The last somite is flattened and broader than long.

The telson is a little shorter than the last somite and its breadth is five-sixths of its length.

The antennules have the first segment of the peduncle longer than the other two together and the second more than half as long as the third. The outer flagellum is composed of two segments, the inner of three.

The antennæ have three segments, the third longer than the preceding.

The mandibles are of the usual shape. The maxillular palp is short and carries two setæ, both broken in the specimen dissected, but apparently unusually short.

The first and second maxillipeds resemble those of *G. carinata* in having long setæ springing from the distal segments. The branchial apparatus appears to have no lobules.

The third maxilliped has no exopod; the basis is little more than twice as long as broad, slightly expanded and produced distally; the propodus is shorter than the carpus.

The first legs extend well in front of the pseudorostrum; the basis is strongly bent and is about half as long as the distal segments together; the carpus is twice as long as the two preceding segments together; the propodus is less than half as long as the carpus and bears a series of about nine very long setæ on the distal part of its inner edge; the dactylus is little more than half as long as the propodus, and has one very long and some shorter terminal setæ.

The second legs have the basis about twice as long as broad and a little longer than the remaining segments together; the ischium is very short and easily overlooked; the dactylus is a little longer than the propodus and bears a short curved terminal claw; all the segments of the limb are setose, especially on the inner surface.

The remaining legs are stout and subequal in length; the basis is about equal to the remaining segments together; the merus is slightly inflated and longer than the last three segments, which are very short; the dactylus is curved and ends in a strongly-curved claw.

The uropods have the peduncle less than twice as long as the last somite and about twice as long as the telson, thickened distally, where the diameter is about one-third of the length, minutely setose, and with a distal spine internally. The exopod is a little more than half as long as the peduncle and has a long and slender terminal spine. The endopod is one and a quarter times as long as the exopod, of two segments, the distal a little longer than the proximal, with a slender terminal spine, one spinule on the inner edge of the first and two on the second segment.

Adult Male.—Total length 1·7 mm.

The dorsal outline of the carapace, seen from the side, is more evenly arched than in the female, not sloping in front, where the dorsal surface is convex from side to side and projects above the dorso-lateral crests. The pseudorostrum is a little more obtuse than in the female, and its upper edge slopes downwards. The ocular lobe is more prominent. The crests of the carapace and of the leg-bearing somites are disposed as in the female.

The antennæ reach only to the hinder edge of the carapace, by which, in the natural position, they are wholly concealed.

The third maxilliped has a well-developed exopod. The first legs are a little shorter than in the female. All the legs, except the last pair, have exopods.

The uropods are relatively a little longer than in the female, the difference in length of the rami is less, and their terminal spines are longer; the inner edge of the endopod has two spinules on the proximal segment and three on the distal.

Remarks.—This species differs greatly in general appearance from the other members of the genus; the short and stout cephalothoracic region, the presence of only a single pair of ridges on the carapace, and the reduction of the interval between the second and third pairs of legs in the female are all well-marked distinctions.

Occurrence.—Gulf of Siam, "Koh Kam, 5–10 fathoms, 2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00." Th. Mortensen Coll. Japan, "33° 10′ N., 129° 18′ E., 40 fathoms, 7/9/97, Suenson Coll." Copenhagen Museum. Co-types in British Museum.

PARADIASTYLIS LONGIPES Calm.

Paradiastylis longipes Calman, Cumacea of Siboga Expedition, p. 21, figs. 4 *a–i* (1905).

Occurrence.—Gulf of Siam, "Koh Kam, 5–10 fathoms, 2/00," "Between Koh Mesan and Cape Liant, 5–8 fathoms, 7/2/00." Th. Mortensen Coll. Copenhagen Museum and British Museum.

Genus COLUROSTYLIS, gen. nov.

Pleural plates of third and fourth free thoracic somites expanded backwards, third legs separated from second in adult female; telson very small, flattened, without spines; third maxillipeds with exopods in both sexes; third and fourth legs with vestigial exopods in female; two pairs of biramous pleopods in male; endopod of uropods of two segments.

Type-species *C. pseudocuma*, sp. n.

In addition to the form and size of the telson, the general form of the body in the species described below is strongly suggestive of the genus *Pseudocuma,* and, in fact, almost the only character visible without dissection to forbid its inclusion in that genus is the segmented endopod of the uropods. An affinity with the Diastylidæ is suggested by a number of small characters, of which the chief are the segmented inner flagellum of the antennule, the modification of the antennular peduncle and of the telson in the male, the triarticulate antenna in the female, the distally expanded basis of the third maxilliped, and the biramous pleopods in the male. The sum of these characters, however, does not remove the impression that the resemblance to the Pseudocumidæ is more than superficial and that the distinction between that family and the Diastylidæ is of diminishing importance.

COLUROSTYLIS PSEUDOCUMA, sp. n. (Plate XXXVI. figs. 23–36.)

Description of adult Female.—Total length 2·1 mm. (larger specimens to 2·3 mm.).

Carapace about two-sevenths of total length; its vertical height two-thirds of its length; dorsal edge slightly curved. Pseudorostrum straight, acute, horizontal or slightly raised. Antennal notch obsolete, antero-lateral corner rounded. Surface of carapace marked with very shallow broad pits. The ocular lobe is shaped much as in *Pseudocuma longicornis.* The eye is without pigment in the specimens examined. The free thoracic somites are deeper than the carapace anteriorly, the pleural plates of the third curved backwards so as to separate the third pair of legs widely from the second. The abdomen is a little shorter than the cephalothoracic region. The telson is about two-thirds as long as the last somite, obtusely pointed posteriorly, carrying a very few minute setæ but without spines.

The antennules have the first segment of the peduncle longer than either the second or third; the outer flagellum is about equal to the last segment of the peduncle, of three segments, the terminal very small; the inner flagellum is about equal to the first segment of the outer, also composed of three segments, the first and third minute. The antennæ are distinctly divided into three segments, the first bearing two setæ, the second and third one each.

The mouth-parts resemble those of *Pseudocumæ.* The mandible has about nine spines.

The third maxillipeds have the basis expanded at the distal end and slightly produced, bearing on its distal edge a series of about four plumose setæ.

First pair of legs broken off in all the specimens seen.

Second legs with the basis about three-fourths as long as the distal segments together; dactylus short, not twice as long as propodus.

Third and fourth pairs of legs with the basis shorter than the distal segments together, bearing near its base an exopod of two segments, not much less than half the length of the segment from which it springs. Last pair of legs not much shorter than the preceding pair.

The uropods have the peduncle more than twice as long as the last somite, with a single spinule at its distal inner corner; the rami are subequal, shorter than the peduncle. The exopod has a long terminal spine, with two short ones on either side of it. The endopod is composed of two segments, the proximal shorter than the distal, fringed with fine setæ on the inner edge, and with a terminal spine and three or four spinules on the distal part of the inner edge partly hidden among the setæ.

Adult Male.—Total length 2·7 mm.

Carapace nearly one-third of total length, its vertical height about half of its length. The free thoracic somites not so deep as in the female; second and third pairs of legs not separated. The penultimate thoracic somite has a marked median dorsal keel. The posterior corners of the last somite are slightly produced and acute. The telson is about three-fourths as long as the last abdominal somite; it is produced well beyond the anal valves, the post-anal part forming a tongue-shaped lobe, of which the outline is continued forwards by two ridges on the dorsal surface of the telson. Two small setæ spring from the under surface, close to the tip, and there are some very fine setæ below the lateral margins.

The antennules have the peduncle slightly increasing in diameter distally, the first segment almost as long as the other two together, the last segment as broad as it is long and bearing a dense tuft of sensory filaments; the outer flagellum is more than half as long as the peduncle and consists of four subequal segments; the inner flagellum is more than half as long as the outer and also consists of four segments, of which the first and last are very small. The antennæ are about as long as the body; the last two segments of the peduncle are indistinctly separated and the sensory setæ which they bear are small and few in number.

Both pairs of pleopods are biramous, the outer ramus in each case of two segments.

The uropods have the peduncle nearly three times as long as the last segment, with about nine spinules interspersed with minute setæ on the inner edge; the rami are less than two-thirds as long as the peduncle; the endopod has on the inner edge six spinules on the first segment and seven on the second, with very minute setæ between.

Occurrence.—New Zealand, "Lyttleton Harbour, 1–5 fathoms, 8/97," "Akaroa Harbour, 6 fathoms, 8/97." H. Suter Coll., Copenhagen Museum. Co-types in British Museum.

Genus Diastylopsis S. I. Smith.

The two species described below conform in general characters to Zimmer's re-definition of this genus (Cumaceen der Deutschen Tiefsee-Exp. p. 189, 1908), except in having a very inconspicuous antennal notch. This character, combined with the elongated and perfectly smooth carapace, without teeth or ridges on the surface, suffices to distinguish them from all the species referred to the genus.

Diastylopsis elongata, sp. n. (Plate XXXVII. figs. 1–12.)

Description of adult Female.—Total length 9·2 mm.

Carapace a little more than one-fourth of total length, compressed, its vertical height less than half its length; dorsal edge very slightly arched. Pseudorostrum straight, acute, slightly raised so as to form a very obtuse angle with the dorsal edge, about one-fifth of total length of carapace. Antennal notch slightly marked. Antero-lateral corner rounded and rather coarsely serrated. Ocular lobe with a minute terminal tooth projecting above the dorsal outline of the carapace. No distinct eye. Surface of carapace smooth.

The five leg-bearing somites are all distinct; the second is much longer than the first; the third and fourth are strongly expanded backwards at the sides, and a wide interval is left between the second and third pairs of legs.

The abdomen is about as long as the cephalothoracic region, rather slender, the fifth somite about twice as long as deep; first somite with a prominent, backwardly-curved tooth in the middle of the sternal surface; fifth somite with the postero-lateral angles spiniform.

Telson a little shorter than the last somite, its post-anal part much narrowed, the width at the level of the proximal pair of lateral spines being about one-eighth of its length; there are about eight pairs of short lateral spines, occupying about two-fifths of the lateral edge; the terminal spines are short.

Antennules with the first segment of the peduncle stout, expanding distally, shorter than the other two together; the second much stouter than, and more than half as long as, the third; the outer flagellum composed of three and the inner of two segments, with perhaps a minute terminal segment in each case.

The antenna is composed of three segments.

The mouth-parts are of normal type. The mandible has an elongated body and about twelve spines on the inner edge. The palp of the maxillula is bisetose. The basis of the third maxilliped is twice as long as the distal segments together, hardly expanded distally, carrying a well-developed exopod.

The first legs extend beyond the tip of the pseudorostrum by little more than the terminal segment; the basis is longer, by more than one-third, than the distal segments together, and has a row of denticles on its lower surface and a tooth at its distal inner corner; the carpus and propodus are subequal, and each a little longer than the dactylus.

The second legs have the basis a little less than one-third longer than the distal segments together, with a small tooth at its distal inner corner; the ischium and merus have the inner edge produced distally as a slight tooth; the merus is two-thirds as long as the carpus and a little shorter than the propodus and dactylus together.

The third and fourth pairs of legs have minute exopods, each of two segments. The coxa of the third pair is broadened in an antero-posterior direction, its distal edge is serrated, and the basis is attached near its posterior end; the basis has a small tooth on the anterior side at its distal end. The fifth pair of legs are much shorter than the fourth.

The peduncle of the uropods is a little more than half as long again as the telson, and has about seven spines on the distal part of its inner edge; the subequal rami are a little longer than two-thirds of the peduncle. The endopod is distinctly divided into three segments, the first longer than the other two together; there are numerous short spines on the inner edge, and the apical spine is short. The exopod bears setæ terminally and on the outer edge.

Adult Male.—Total length 9 mm.

The dorsal edge of the carapace is nearly straight and the pseudorostrum is horizontal. The ocular lobe is slightly prominent on the dorsal surface as seen from the side, but has no terminal tooth. The third and fourth leg-bearing somites are less strongly produced backwards than in the female, and there is no marked interval between the second and third pairs of legs. The last thoracic somite has the postero-lateral corners produced as short spines. The ventral spine of the first abdominal somite is bifid. The telson, which has the usual dorsal prominence, is about as long as the last somite.

The peduncle of the antennules has the terminal segment stouter than in the female, and carrying a tuft of sensory filaments; the outer flagellum has five and the inner three segments, apart from a doubtful terminal segment in each case.

The antennæ have the usual structure; the sensory filaments on the anterior surface of the peduncle are very short; the flagellum, broken in the specimen figured, appears to be as long as the body.

The second legs have the distal segments more elongated than in the female, together hardly shorter than the basis; the carpus is nearly twice as long as the merus; the propodus is stouter and longer than the dactylus, and the latter bears terminally two small curved claws, which are absent in the female. In the third and fourth pairs of legs the basis is produced into a strong tooth at its distal end anteriorly. In the fourth and fifth pairs (but not in the third) the ischium is produced posteriorly in a tooth-like process.

Both pairs of pleopods are biramous, with the exopod of two segments.

The exopod of the uropods is slightly shorter than the endopod; there are numerous spinules on the inner edge of the latter and of the peduncle.

Occurrence.—New Zealand, "Lyttleton Harbour, 1–5 fathoms, H. Suter Coll., 8/97," "Akaroa Harbour, H. Suter." Copenhagen Museum. Co-types in British Museum.

Diastylopsis crassior, sp. n. (Plate XXXVII. figs. 13–18.)

Description of adult Female.—Total length 9·25 mm.

Closely resembling *D. elongata.* The slightly curved dorsal outline of the carapace is continued without a break by the upper edge of the pseudorostrum. The ocular lobe is not prominent dorsally, and has no tooth. The pseudorostrum is less acutely pointed than in *D. elongata.*

Abdominal somites much stouter than in *D. elongata,* the fifth somite less than one and a half times as long as deep. First somite without any median tooth on the ventral side (only in one specimen a minute median denticle was observed), but with two ventro-lateral rows of denticles. Postero-lateral angles of third, fourth, and fifth somites spiniform.

Telson much less narrowed distally than in *D. elongata,* its width at the level of the proximal pair of spines nearly one-fourth of its length; there are seven or eight spines on each side and the terminal spines are short.

The antennules are relatively a little longer than in *D. elongata.* The mouth-parts show no differences of importance.

The first legs have the spines on the lower surface of the basis stronger and more numerous than in *D elongata.* The basis of the second legs is little shorter than the distal segments together and has some teeth on its lower surface and outer edge and a strong tooth at its distal inner corner; the ischium is produced on the inner side into two and the merus into three strong teeth; the merus is a little more than half as long as the carpus, and equal to the propodus and dactylus together.

The succeeding pairs of legs are stouter and longer than in *D. elongata.* The tooth at the distal end of the basis in the third and fourth is strong and, in some cases, bifid.

The peduncle of the uropods is twice as long as the telson and has six spines, much longer than those of *D. elongata,* on its inner edge; the exopod is distinctly longer than the endopod, which is about two-thirds as long as the peduncle; the spines on the inner edge of the peduncle are longer than in *D. elongata.*

Remarks.—This species is very closely allied to, but I believe distinct from, *D. elongata,* in company with which it occurred. It differs from that species in the stouter abdomen (which is very conspicuous when specimens of similar size are compared), in the very different spinous armature on the under side of the first abdominal somite, in the form of the telson, and in the stronger spines on the legs, especially on the second pair.

Occurrence.—New Zealand, "Lyttleton Harbour, 1–5 fathoms, H. Suter Coll., 8/97." Copenhagen Museum. Co-types in British Museum.

Genus DIASTYLIS.

The genus *Diastylis*, as it stands at present, is hardly more than a convenient receptacle for unclassified Diastylidæ, and this alone can excuse the temporary assignment to it of the remarkable form here described from immature specimens as *Diastylis* (?) *fistularis*. The other new species is a typical *Diastylis*, or, rather, it belongs to the group which we may assume to be typical until Say's *D. arenaria* is rediscovered.

DIASTYLIS KOREANA, sp. n. (Plate XXXVII. figs. 19–25.)

Description of adult Female.—Total length 12 mm.

Carapace about one-third of total length, its vertical height a little less than half its length, widest behind, where the width is about two-thirds of its length; dorsal surface arched, slightly uneven in front and with a median depression posteriorly between the branchial regions; the whole surface beset with setæ, among which are minute spiniform points, most conspicuous on the anterior part of the dorsal surface. Pseudorostrum slender, slightly curved as seen from the side, nearly one-third of total length of carapace. Antennal notch obsolete, lower margin minutely dentate anteriorly. Ocular lobe very small or absent; no distinct eye.

The free thoracic somites are rather less thickly setose than the carapace; the last thoracic somite has the posterior corners not produced, rounded, with a minute terminal spinule.

The abdomen is about as long as the cephalothoracic region; the first five somites have the lateral corners produced and spiniform, and each bears a pair of small dorsolateral teeth.

The telson is as long as the last two somites together; the post-anal part is a little shorter and much narrower than the pre-anal, and bears on each side about ten long, slender, almost setiform, lateral spines; the terminal spines are a little stouter and, like the lateral spines, curved upwards.

The antennules are rather slender and the peduncle reaches to the tip of the pseudorostrum; the first and third segments are subequal and longer than the second; the flagella were imperfect in all the adult specimens examined.

The first legs extend beyond the pseudorostrum by the length of their two distal segments; the basis is two-thirds as long as the distal segments together, and carries numerous long plumose hairs; there are a few small teeth on its lower surface; the propodus is longer than the carpus and nearly twice as long as the dactylus.

The second legs have the basis a little shorter than the distal segments together, carrying long plumose setæ; the carpus is longer by one-half than the propodus and dactylus together.

The last three pairs of legs are stout, with numerous strong setæ on the distal segments; the merus is produced distally on the outer or posterior side of its articulation with the carpus into a rounded tubercle.

The uropods are slender, the peduncle about as long as the telson, with about twelve spinules on the inner edge. The exopod is shorter than the endopod, and curved. The endopod is about half as long as the peduncle, distinctly divided into three segments, of which the first is longer than the other two together; the inner edge has about eleven spinules, and the short terminal spine is distinctly defined.

Remarks.—The hairiness of the carapace gives this species some resemblance to *D. goodsiri* *, which it further resembles in the acutely produced lateral angles of the abdominal somites and in the length and slenderness of the lateral spines on the telson. It differs in the form of the carapace, which is narrowed in front, in the great length of the pseudorostrum, and in the proportions of the telson. The knob-like prominence on the merus of the last three pairs of legs appears also to be a distinctive character.

Occurrence.—"Korea, 35 fathoms, Suenson Coll., 22/1/82." Copenhagen Museum. Co-types in British Museum.

DIASTYLIS (?) FISTULARIS, sp. n. (Plate XXXVII. figs. 26–36.)

Description of young Specimen (? Male).—Total length 3·1 mm.

Carapace about one-third of total length, its vertical height about one-half of its length, subcylindrical, abruptly narrowed in front as seen from above; dorsal surface slightly arched, rather flattened anteriorly. Pseudorostrum straight, acutely pointed. Antennal notch hardly indicated. Posteriorly the surface of the carapace bears four longitudinal ridges on each side; anteriorly on each side is a vertical ridge forming a marked "shoulder" when viewed from above; from the upper end of the vertical ridge an obliquely longitudinal ridge runs backwards and curves towards the median line about the middle of the dorsal surface. The ocular lobe is a little broader than long and is without pigment or definite corneal facets.

The first free thoracic somite is partly concealed laterally; the third and fourth are not distinctly separated on the dorsal surface.

The abdomen, including the telson, is longer by one-third than the cephalothoracic region; the fifth somite is hardly longer than the preceding; the sixth is longer than the fifth, somewhat flattened, hardly longer than broad, with the uropods articulated about the middle of its length.

The telson is about as long as the last four somites together, and two-thirds their thickness. It is cylindrical in form, with a slight dorsal curvature, and bluntly pointed at the tip. The anus is terminal and the anal valves are placed as in *D. tubulicauda*, although they are not so well marked as in that species. The apex of the telson on the dorsal side of the anus is without spines and has only a single lateral pair of fine setæ.

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* Sars states (Crust. Norway, iii. p. 54) that in *D. goodsiri* the surface of the carapace is "without any spines or denticles." Hansen, on the other hand, describes it as "taet besat med meget fine skarpe og spidse Kegler." A fine specimen, received from the Copenhagen Museum, agrees with Dr. Hansen's description in this respect.

The antennules are about three-fourths as long as the carapace; the first segment of the peduncle is a little longer than either of the other two; the outer flagellum is more than one-third of the length of the peduncle and more than twice as long as the inner.

The antennæ have a large fusiform terminal segment which may possibly represent the developing flagellum of the male sex.

The mouth-parts appear to present no noteworthy divergences from the usual type. The branchial plates have about four lobules and others in course of development.

The third maxillipeds have small exopods, without setæ, and obscurely divided into two segments; the basis is greatly expanded distally and is produced into a broad lobe which reaches nearly to the end of the carpus.

The first legs are long and slender, about half of the carpus extending beyond the pseudorostrum; the basis is a little less than half as long as the distal segments together; the carpus is a little shorter than the propodus, which is nearly three times as long as the dactylus.

The second legs have the basis narrowed distally, a little shorter than the distal segments together, the carpus about equal to the dactylus and three times as long as the propodus.

The third and fourth pairs of legs are long and stout. Each bears an exopod, about one-third of the length of the basis, indistinctly divided into two segments, and carrying a single terminal seta. The fifth pair of legs are only two-thirds as long as the preceding pair, without exopods, and with fewer setæ.

The uropods hardly extend beyond three-fourths of the length of the telson; the peduncle has three minute setæ on the distal part of its inner edge. The exopod is a very little longer than the endopod and more than half the length of the peduncle; its apical setæ are long and slender. The endopod has three segments, the first occupying more than half its length, with four small spines on the inner edge and a slender terminal spine.

In a specimen 1·7 mm. in total length the last thoracic somite is still without appendages, the endopod of the uropods consists of only two segments, and the exopods on the third and fourth pairs of legs and on the third maxillipeds are extremely small.

A specimen of which the total length cannot have been less than 6 mm. is unfortunately represented only by the abdomen and the posterior thoracic somites. It has no exopods on the third and fourth pairs of legs.

Remarks.—In the great size and tubular form of the telson this species resembles *D. tubulicauda* Calman (Cumacea, in Fisheries, Ireland, Sci. Invest. 1904, i. (1905)

p. 46, pl. v. figs. 82–86). The unique type-specimen of that species, like the two smaller of the specimens described above, has minute exopods on the third and fourth pairs of legs, and, like the smallest, is without appendages on the last thoracic somite; on the other hand, it possesses a well-developed exopod on the third maxilliped where the present specimens have only a rudiment. The new species further differs in having no apical spines on the telson, a character in which it approaches *Pachystylis rotundata* of Hansen.

Only the discovery of adult specimens will allow the generic position to be decided, but the characters of the form here described are so striking that there can be little difficulty in recognising the species again.

Occurrence.—Gulf of Siam, "Between Koh Mesan and Cape Liant, 9 fathoms," "Koh Kam, 10 fathoms," "Koh Chuen, 30 fathoms." Th. Mortensen Coll., Copenhagen Museum. Co-type in British Museum.

DIASTYLIS INSULARUM Calm.

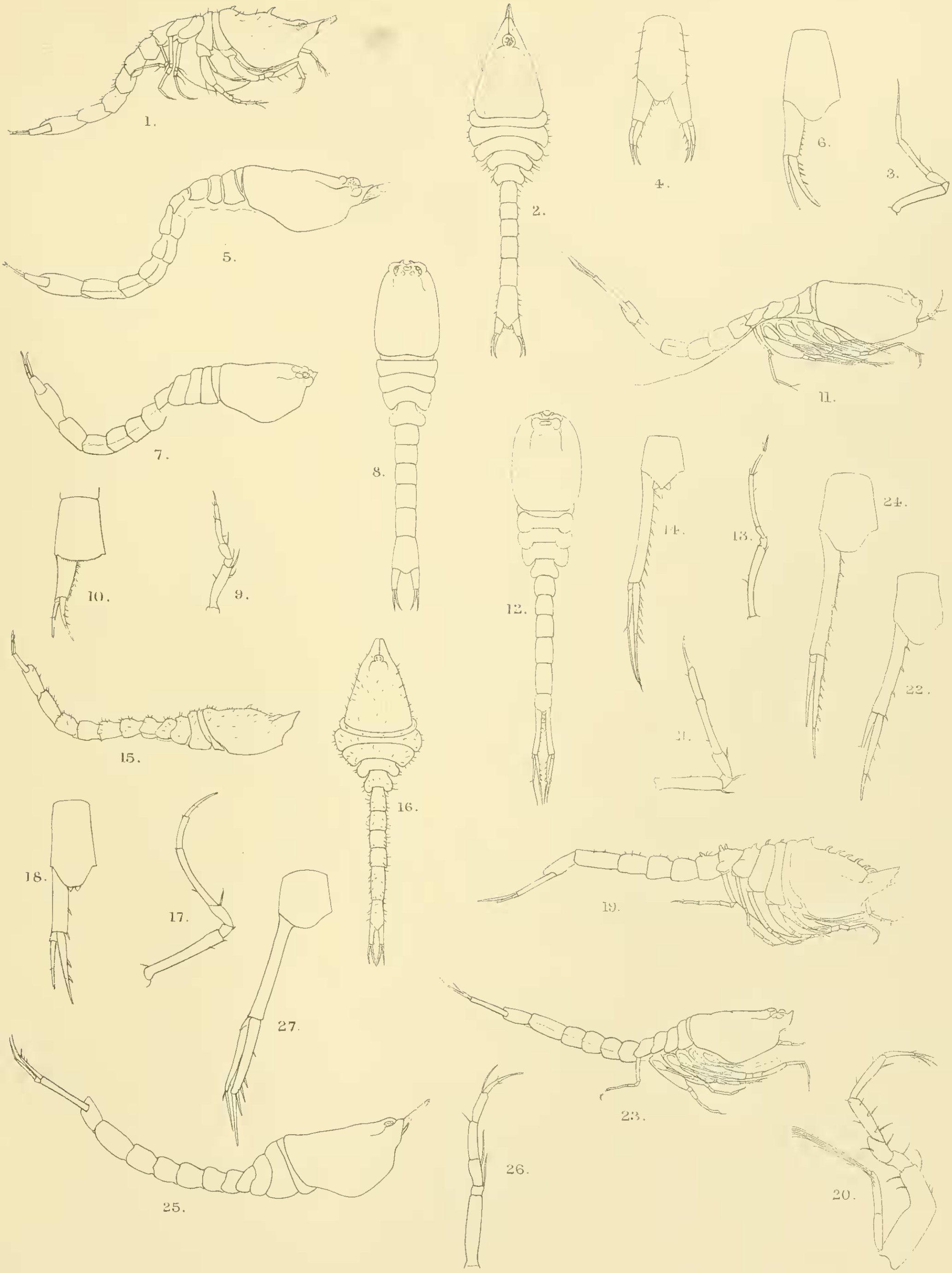
Leptostylis (?) *insularum,* Calman, Ann. Mag. Nat. Hist. (8) i. p. 234, figs. 1–5 *a* (1908).

Occurrence.—"Lyttleton Harbour, New Zealand, 1–5 fathoms, 8/97. H. Suter Coll." Copenhagen Museum and British Museum.

PLATE XXXII.

PLATE XXXII.

Fig. 1. *Cumella forficula* (p. 345). Female. From the side.
2. ,, ,, ,, From above.
3. ,, ,, ,, Fifth leg.
4. ,, ,, ,, Last somite and uropods.
5. ,, ,, Male. From the side (appendages omitted).
6. ,, ,, ,, Last somite and uropods.
7. *Cumella clavicauda* (p. 346). Male. From the side (appendages omitted).
8. ,, ,, ,, From above.
9. ,, ,, ,, Fifth leg.
10. ,, ,, ,, Last somite and uropod.
11. *Cumella leptopus* (p. 347). Male. From the side.
12. ,, ,, ,, From above.
13. ,, ,, ,, Fifth leg.
14. ,, ,, ,, Last somite and uropod.
15. *Cumella hispida* (p. 347). Female. From the side (appendages omitted).
16. ,, ,, ,, From above.
17. ,, ,, ,, Fifth leg.
18. ,, ,, ,, Last somite and uropod.
19. *Cumella serrata* (p. 348). Female. From the side.
20. ,, ,, ,, First leg.
21. ,, ,, ,, Fifth leg.
22. ,, ,, ,, Last somite and uropod.
23. ,, ,, Male. From the side.
24. ,, ,, ,, Last somite and uropod.
25. *Cumella lævis* (p. 350). Female. From the side (appendages omitted).
26. ,, ,, ,, Fifth leg.
27. ,, ,, ,, Last somite and uropod.



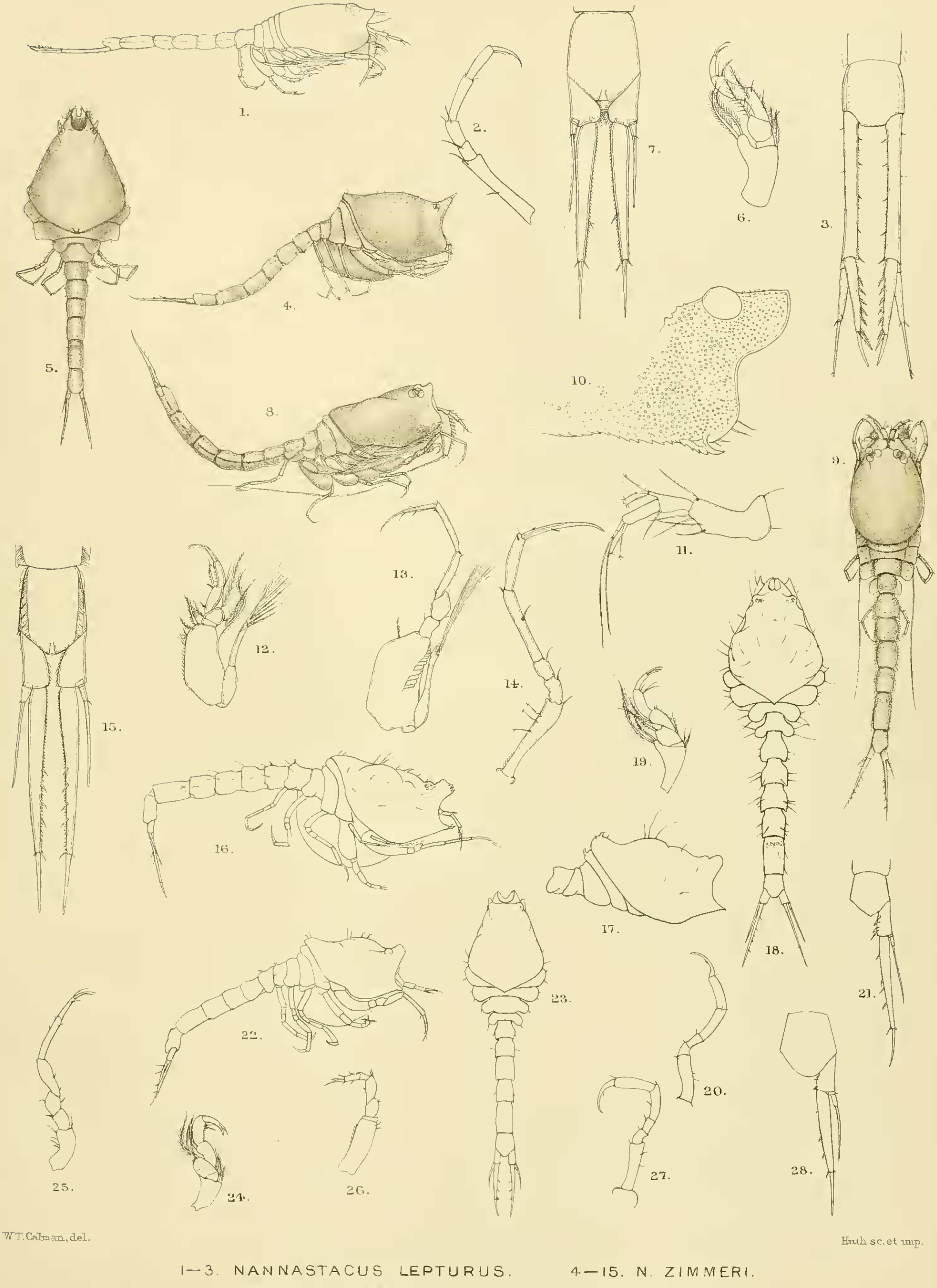
W.T. Calman, del.
Huth, imp.

1—6. CUMELLA FORFICULA. 7—10. C. CLAVICAUDA. 11—14. C. LEPTOPUS.
15—18. C. HISPIDA. 19—24. C. SERRATA. 25—27. C. LAEVIS.

PLATE XXXIII.

PLATE XXXIII.

Fig. 1.	*Nannastacus lepturus* (p. 352).	Male.	From the side.
2.	,, ,,	,,	Fifth leg.
3.	,, ,,	,,	Last somite and uropod.
4.	*Nannastacus zimmeri* (p. 352).	Female.	From the side.
5.	,, ,,	,,	From above.
6.	,, ,,	,,	Third maxilliped.
7.	,, ,,	,,	Last somite and uropods.
8.	,, ,,	Male.	From the side.
9.	,, ,,	,,	From above.
10.	,, ,,	,,	Antero-lateral part of carapace.
11.	,, ,,	,,	Antennule.
12.	,, ,,	,,	Third maxilliped.
13.	,, ,,	,,	First leg.
14.	,, ,,	,,	Fifth leg.
15.	,, ,,	,,	Last somite and uropods.
16.	*Nannastacus gibbosus* (p. 355).	Female.	From the side.
17.	,, ,,	,,	Outline of cephalothoracic region from another specimen.
18.	,, ,,	,,	From above.
19.	,, ,,	,,	Third maxilliped.
20.	,, ,,	,,	Fifth leg.
21.	,, ,,	,,	Last somite and uropod.
22.	*Nannastacus reptans* (p. 356).	Female.	From the side.
23.	,, ,,	,,	From above.
24.	,, ,,	,,	Third maxilliped.
25.	,, ,,	,,	First leg.
26.	,, ,,	,,	Second leg.
27.	,, ,,	,,	Fifth leg.
28.	,, ,,	,,	Last somite and uropod.



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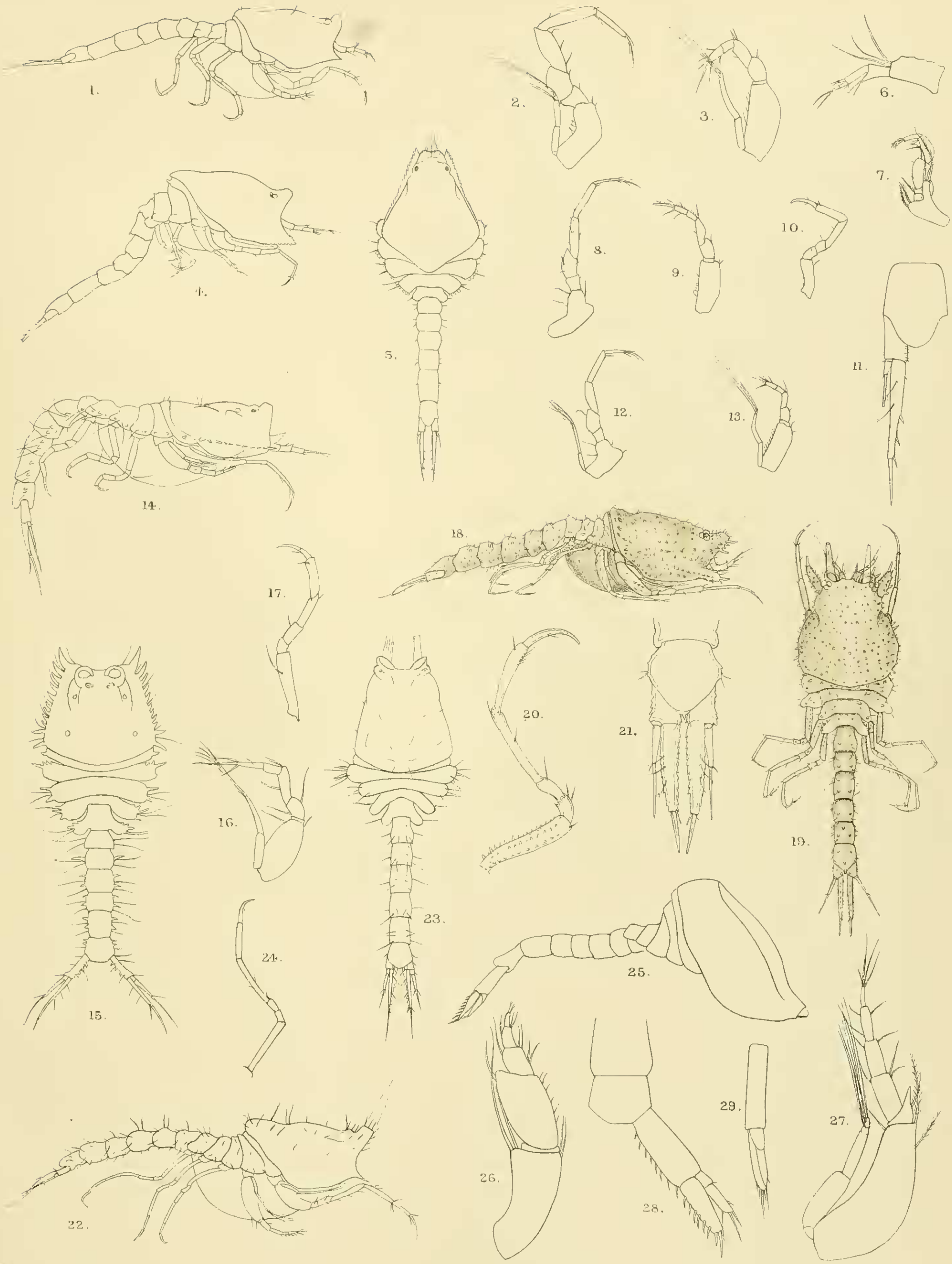
1—3. NANNASTACUS LEPTURUS. 4—15. N. ZIMMERI.
16—21. N. GIBBOSUS. 22—28. N. REPTANS.

PLATE XXXIV.

PLATE XXXIV.

Fig. 1.	*Nannastacus*	*minor* (p. 357).	Female.	From the side.
2.	,,	,,	,,	First leg.
3.	,,	,,	,,	Second leg.
4.	*Nannastacus*	*tardus* (p. 359).	Female.	From the side.
5.	,,	,,	,,	From above.
6.	,,	,,	,,	Antennule.
7.	,,	,,	,,	Third maxilliped.
8.	,,	,,	,,	First leg.
9.	,,	,,	,,	Second leg.
10.	,,	,,	,,	Fifth leg.
11.	,,	,,	,,	Last somite and uropod.
12.	*Nannastacus*	*agnatus* (p. 360).	Female.	First leg.
13.	,,	,,	,,	Second leg.
14.	*Schizotrema*	*depressum* (p. 361).	Female.	From the side.
15.	,,	,,	,,	From above.
16.	,,	,,	,,	Second leg.
17.	,,	,,	,,	Fifth leg.
18.	*Schizotrema*	*bifrons* (p. 362).	Female.	From the side.
19.	,,	,,	,,	From above.
20.	,,	,,	,,	Fifth leg.
21.	,,	,,	,,	Last somite and uropods.
22.	*Schizotrema*	*sordidum* (p. 363).	Female.	From the side.
23.	,,	,,	,,	From above.
24.	,,	,,	,,	Fifth leg.
25.	*Campylaspis*	*platyuropus* (p. 364).	Female.	From the side (appendages omitted).
26.	,,	,,	,,	Third maxilliped (exopod omitted).
27.	,,	,,	,,	First leg.
28.	,,	,,	,,	Last somite and uropod, from above.
29.	,,	,,	,,	Uropod, from the side.



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1–3. NANNASTACUS MINOR. 4–11. N. TARDUS. 12–13. N. AGNATUS.
14–17 SCHIZOTREMA DEPRESSUM. 18–21. S. BIFRONS.
22–24. S. SORDIDUM. 25–29. CAMPYLASPIS PLATYUROPUS.